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ABSTRACT

The study focused on defining the needs of migrant and former migrant students where "need" was defined as a difference between their performance and that of nonmigrant students. Migrant students' needs were assessed in seven domains of development--background, social, ability, self-concept, achievement, gross motor, and fine motor. During January 1977, 625 students in 9 schools were administered the Boehm and Culture Fair tests, the Self-Observation Scales, Metropolitan Readiness Test, Iowa Test of Basic Skills, Test of Academic Progress, and Career Maturity Inventory. Information for the background and social domains was obtained through the teacher responses on the Student Information Forms; the Gross and Fine Motor proficiency were both ascertained from the Physical Fitness Survey. Analyses were performed for 5, 7, 10, 13, and 16 year olds, for males and females, and for migrants, former migrants, and nonmigrants. Findings included: economic needs and communication problems interfered with education more often for migrant students than for nonmigrant students; migrant students scored lower on explosive power at age 7, cardiovascular endurance at age 13, dynamic arm strength at age 13, and hand-eye coordination at ages 7 and 13; former migrant students repeated one or more grades more often than nonmigrant students; and former migrant students had significantly lower reading and mathematics scores than nonmigrant students. Statistical analyses of teacher responses and test results, and descriptions of the instruments used are appended. (NQ)

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CHOICES NOT CIRCUMSTANCES

AN EDUCATIONAL NEEDS ASSESSMENT FOR THE CHILDREN OF ARIZONA'S MIGRATORY AGRICULTURAL WORKERS

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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VOLUME III

EDUCATIONAL ASSESSMENT

MAY, 1977

CAROLYN WARNER, SUPERINTENDENT, ARIZONA DEPARTMENT OF EDUCATION

RC009990

This report was prepared for the Arizona Migrant Education Program by D. A. LEWIS ASSOCIATES, Inc., a metropolitan Washington, D. C.-based research, consulting, and publishing company. The firm has performed client assignments for federal agencies, over twenty states, and private organizations, including such research as comprehensive needs assessments for migrant education in two states, analysis of the movements of migrant pupils for five states, evaluation of the educational and economic impact of preschool day care centers, two separate benefits analyses of the Migrant Student Record Transfer System, and assessment of the functioning of migrant health programs. In addition to its research activities, the firm has published OLÉ II, an oral language assessment manual; a manual on Minimum Objectives for Teaching Basic Skills in Communications, Reading, and Mathematics; and The Migrant Educator, the national news publication for educators of migrant children.

The director of this project was JOHN D. HUSS whose professional specialty is the management improvement of public programs. Mr. Huss has been a government administrator and consultant for over fifteen years. He has directed studies ranging from a few person-days to twenty-five person-years of effort, including numerous organization and management analyses and program evaluations. On a similar comprehensive needs assessment previously conducted by D. A. Lewis Associates, Inc., for the State of Florida, he participated as a task leader and project coordinator; and he is currently in charge of a management and technical assistance contract for the U. S. Department of Justice on the illegal-alien situation in the United States. Mr. Huss has authored numerous Government reports and issuances, contributed to professional publications, and is an editor of an international bimonthly journal dedicated to advancing the state-of-the-art in futural research.

VOLUME III

EDUCATIONAL ASSESSMENT

Prepared by

D. A. LEWIS ASSOCIATES, INC.

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SECTION A

STUDENTS' NEEDS ASSESSMENT

CHAPTER 1

INTRODUCTION

The objective of the student's needs assessment is to present a multi-dimensional portrait of migrant and former migrant students' needs. The study focuses on three sets of questions:

1. Are there identifiable subpopulations of migrant students with distinct characteristics? Do the education needs of these subpopulations differ? In what ways do they differ?
2. In what respects do the educational needs of migrant students (by subpopulation) coincide with those of the nonmigratory student population? In what ways are the educational needs of the migrant students unique?
3. What are the current needs (including educational needs) of migrant students? Which needs are critical, and what priority should be assigned to each need? To what degree are these needs being met by present programs? How could present programs be revised to better meet these needs?

The presentation of the findings is purposefully systematic and impersonal, without heart-wrenching anecdotes or personal observations of children in poverty. Nonetheless, the assessment will have served its purpose only if it succeeds in producing a sense of indissoluble and intimate identification between the reader and migrant students with their special needs. It is sincerely hoped that this assessment portrays the diversity and complexity of migrant students needs and that the identification of these needs leads to action which eliminates those deficiencies.

The present study focuses on defining the needs of "migrant" and "former migrant" students where "need" is defined as a difference (deficiency) between the performance of migrant or former migrant students and the performance of nonmigrant students. These needs, however, must be viewed as a minimum statement of the actual needs of migrant students. Because nonmigrant students in this study come from the same schools as the migrant students and, consequently, may be more socioeconomically disadvantaged than the typical middle-class student, the findings possibly underestimate the needs of migrant students.

The first study of this type was conducted in Florida during the period of November 1975 to April 1976. It is important to note that this study for Arizona utilized the same procedures, thus achieving comparability of results. With but one exception, the tests administered were those utilized in the Florida study, and the test scores were statistically analyzed in the same manner.

Many of the findings of the study replicate the results reported by other investigators working with more limited samples of variables and subjects. The unique features of this assessment are (1) the consideration of a wide spectrum of behaviors in establishing needs and (2) the large, multi-age sample. The approach of contrasting a migrant sample with a nonmigrant sample likewise sets this study (and the study completed for the State of Florida) apart from previous needs assessment studies.

The Arizona student needs assessment focuses on defining the deficiencies of "migrant" and "former migrant" students. Migrant students are members of families currently classified as migrant farmworkers, while former migrant students are members of families who have worked as migrant farmworkers within the immediately preceding five-year period. A "need" is operationally defined as a difference in performance level between migrant and former migrant students, on the one hand, and nonmigrant students, on the other. Implicit in the definition is that the greater the difference in performance level, the greater the need.

Performance level is defined in the following way: A school in our society is expected to impart to its students certain skills and information, for example, reading and computational skills, American and state history, or science and language skills. Schools are also expected to inculcate in students attitudes and beliefs that will, presumably, foster individual happiness and democratic ideals. In addition, schools are expected to prepare students for adulthood through career training programs and counseling toward continuing education.

Students' performance levels in these areas are considered to be the outcomes for which the schools are held responsible and are measured by the various instruments used in the assessment.

School administrators, teachers, legislators, and laymen have been inundated with the research attention given reading and mathematics and have consequently allowed traditional assessments to focus on only a small portion of the school outcomes. Only passing attention has been given to other aspects of students' development. In order to obtain a better understanding of human development, a more comprehensive approach — one assessing more than one or two behavioral domains — was taken in this study. It is hoped that one outcome of multidimensional needs assessments like the present one will be the demonstration of additional needs, such as psychomotor and affective variables, thus arming the educators with more resources with which to aid migrant and former migrant students.

A broad range of measures has been included in the study in an attempt to comprehensively describe the strengths and weaknesses of migrant and former migrant students' performance. The seven domains included in this study are Background, Social, Ability, Self-Concept, Achievement, Gross Motor, and Fine Motor. By including several aspects of human development in this assessment, a multi-dimensional portrait of the differences between migrant and former migrant students and nonmigrant students is possible. It is also possible to examine possible causal influences which, although perhaps outside education's boundary of influence, are nonetheless implicated in students' scholastic performance.

CHAPTER 2

METHODOLOGY AND INSTRUMENTATION

Four Arizona School Districts participated in this study: Casa Grande District No. 4, Dysart Elementary District No. 89, Somerton School District No. 11, and Yuma Union High School District No. 70. Six hundred twenty-five students in nine schools were tested during the last two weeks of January 1977. The districts were selected on the basis of total number of migrant students, composition of the migrant population therein, and urban/rural status of the district. Five age groups were sampled: five, seven, ten, thirteen, and sixteen-year olds. Analyses were performed separately for males and females, and Migrants, Former Migrants, and Nonmigrants. Contrasts between Mexican-American migrant and Other White migrant, Other White migrant and Black migrant, and Black migrant and Mexican-American migrant were attempted but there were too few Black and Other White migrants in the sample to permit statistical analyses.

Measurement procedures in seven domains of development were used to assess migrant students' needs. These domains and representative factors within each domain included: (1) Background (School Attendance, Family Support of School Activities, Language Problems, Health Problems); (2) Social (teacher rated: Voluntary Participation, Aggression); (3) Ability (nonverbal activity); (4) Self-Concept (Self-Acceptance, Self-Security, Social Maturity, Peer Affiliation, Family Affiliation); (5) Achievement (Vocabulary, Reading Comprehension, Mathematical Concepts, Mathematical Problems); (6) Gross Motor (Speed, Explosive Power, Cardiovascular Endurance, Balance); (7) Fine Motor (Hand-Eye Coordination and Digital Coordination).

Instrumentation

The overriding concerns which governed selection of instrumentation for this assessment were the importance of comprehensive assessment of migrant students' needs unrestrained by a traditional definition of education's role, and an emphasis on "information utility", that is, collecting information which would be useful in redirecting educational programs. It should be recognized that, although, philosophically speaking, education is concerned with human development, a popular movement exists which marches under the banner, "return to the basics, return to the 3 R's." Whatever one's philosophical persuasions, most observers would agree that considerations outside of the school's influence determine, at least in part, how well a student performs in the 3 R's and this must be included in any assessment of students' needs.

One premise of this study is that if schools are to help in alleviating as many of the migrant students' needs as possible, they must not only be aware of individual needs, but also the interactions among them. Some of the identified needs may not be appropriate targets for educational intervention, but it is important to recognize that "needs" cluster together and interact. Only through conceptualizing students' needs broadly, can effective intervention strategies be designed to alleviate the multiple needs.

In the following tables, each of the instruments used in the assessment is described. A more detailed description is given in Appendix A. Figure 1 describes the selected psychometric properties of each of the instruments used in the assessment. Figure 2 summarizes the instruments used in each of the domains. Figure 3 provides a list of the subscales or questions by domain and age level.

FIGURE 1

Selected Psychometric Properties of Instruments Used in the Study

	Form	Publisher	No. of Items	Age	Time	Types of Norms	Test/retest Reliability
Ability							
Culture Fair Scale 1	A	Institute for Personality and Ability Testing		7	40 min.	local	.90
Culture Fair Scale 2	A			10,13,16			
Boehm (BTSC)	A	Psychological Corp.		5	15 min.	national	.81-.90
Physical Fitness							
Physical Fitness Survey (PFS)	k-Sr. High	National Testing Service		5,7,10,13,16	1 hr./student	local	.85-.90
Achievement							
Metropolitan Readiness Test	A	Harcourt, Brace Jovanovich, Inc.		5	1 hr., 45 min.	national	.91
Iowa Test of Basic Skills (ITBS)	5, level 7	Houghton Mifflin Co.		7	1 hr., 20 min.	national 1970	.85-.95
Iowa Test of Basic Skills (ITBS)	5, level 9-14	Houghton Mifflin Co.		10,13	2 hr., 12 min.	national 1970	.85-.95
Tests of Academic Progress (TAP)	level S 9-12	Houghton Mifflin Co.		16	1 hr., 55 min.	national Fall 1970	.85-.90
Career Maturity Inventory	A-1	McGraw-Hill		13,16	55 min.	——	——
Self-Concept							
SOS Primary	A	National Testing Service	50	5	25 min.	national	.75-.85
SOS Intermediate	A	National Testing Service	60	7-10	25 min.	national	.80-.85
SOS Jr. & Sr.	A	National Testing Service	120	13,16	35 min.	national Spring 1975	.80-.90

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 2

PSYCHOMETRIC INSTRUMENTS USED IN DOMAINS

SOURCE OF ASSESSMENT DATA BEHAVIORAL DOMAIN	Student Information Form	Boehm	Culture Fair	Self Observation Scales	Metropolitan Readiness	Iowa Test of Basic Skills	Tests of Academic Progress	Career Maturity Inventory	Physical Fitness Survey
Background	X								
Social	X								
Ability		X	X						
Self-Concept				X					
Achievement					X	X	X	X	
Gross Motor									X
Fine Motor									X

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 3

Summary of Factors Measured at Each Age Level

Behavioral Domain	5	7	10	13	16
Background Characteristics					
Students Repeating a Grade	X	X	X	X	X
Number of Days Absent	X	X	X	X	X
Physical or Health Problems that Interfere with Educational Progress	X	X	X	X	X
Language Problems that Interfere with Educational Progress	X	X	X	X	X
Family Supportive of School Efforts	X	X	X	X	X
Social					
Behavioral Problems Sufficient to have Required Referral to Other Services	X	X	X	X	X
Teacher Rating: Voluntary Participation in School	X	X	X	X	X
Teacher Rating: Student Withdrawal	X	X	X	X	X
Teacher Rating: Student Aggression	X	X	X	X	X
Teacher Rating: Serious Behavioral Problems	X	X	X	X	X
Ability					
Fluid Abilities	X	X	X	X	X
Self-Concept					
Self-Acceptance	X	X	X	X	X
School Affiliation	X	X	X	X	X
Self-Security	X	X	X	X	X
Social Maturity	X	X	X		
Social Confidence			X	X	X
Teacher Affiliation			X	X	X
Peer Affiliation			X	X	X
Self-Assertion				X	X
Achievement					
Auditory Memory	X				
Rhyming	X				
Letter Recognition	X				
Visual Matching	X				
School Language and Listening	X				
Quantitative Language	X				
Reading Vocabulary		X	X	X	
Reading Comprehension		X	X	X	
Reading					X
Math Concepts		X	X	X	
Math Problem Solving		X	X	X	
Mathematics					X
Career Planning				X	X
Career Problem Solving				X	X
Gross Motor					
Speed		X	X	X	X
Explosive Power		X	X	X	X
Cardiovascular Endurance		X	X	X	X
Flexibility		X	X	X	X
Balance		X	X	X	X
Agility		X	X	X	X
Dynamic Arm Strength		X	X	X	X
Static Arm Strength		X	X	X	X
Fine Motor					
Hand-Eye Coordination		X	X	X	X
Digital Coordination		X	X	X	X

Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

CHAPTER 3

AN ANALYSIS OF MIGRANT STUDENT NEEDS ACROSS SEVEN BEHAVIORAL DOMAINS

The purpose of this chapter is to present the results of a detailed examination of differences among three "migrant" categories (Migrant, Former Migrant, and Nonmigrant) on seven domains (Background, Social, Ability, Self-Concept, Achievement, Gross Motor, and Fine Motor). Each domain is comprised of several variables or subscales. For example, in the Self-Concept Domain for five-year olds, Self-Acceptance, Self-Security, Social Maturity, and School Affiliation are investigated. For each subscale, descriptive or inferential statistics are presented to examine the differences and similarities of students in each of the three migrant categories.

The relationships between various domains are not explored in this chapter. The primary emphasis in this chapter is the cataloging and summarization of the ways in which Migrant and Former Migrant students differ in their backgrounds and performance from Nonmigrant students. All comparisons are made separately for males and females within each of the Migrant, Former Migrant, and Nonmigrant groups. A detailed analysis of the interrelationships among the seven domains has been included in Section B of this volume.

It is important to bear in mind that one of the qualifications to this study is that the assessment of Migrant and Former

Migrant students, in all likelihood, underestimates the deficiencies of those students because the Nonmigrant students included in this study are, as a group, below national norms on many variables. As a consequence, observations of the substantial behavioral differences between Nonmigrant and Migrant students observed in this study are actually quite conservative estimates of the needs of Migrant students.

As described in preceding chapters, information for the Background and Social Domains was obtained through the responses of teachers on the Student Information Forms. Assessment data for the Ability Domain were obtained from the Boehm and Culture Fair tests and Self-Concept was evaluated by the Self-Observation Scales. Four tests were utilized to assess Achievement (Metropolitan Readiness, Iowa Test of Basic Skills, Test of Academic Progress, and Career Maturity Inventory), while Gross and Fine Motor proficiency are both ascertained from the Physical Fitness Survey.

Background Domain

Poverty is conventionally defined according to annual income adjusted to size of family. The definition is useful in research because it provides an "unambiguous" index of degree of impoverishment. While providing an index, however, it does not give insight into the concomitants of poverty, nor does it say anything about the pressures exerted upon the developing student. The Background Domain of the students' needs assessment provides the reader with additional resources that may be utilized in the attempt to understand the effects of poverty on learning.

Figure 4 summarizes the differences among the Migrant, Former Migrant, and Nonmigrant groups on each of the questions asked of the teachers about the students. Significant differences were found on three of the areas investigated between Migrants and all other students. Migrants were found, more likely than Former Migrants or Nonmigrants, to have economic needs interfering with education, communication problems interfering with education, and families not supportive of school work.

Former Migrants were found to have repeated a grade significantly more often than Nonmigrants. The question of whether a student repeated a grade must be interpreted with caution, however, particularly in the case of Migrants. The teacher may not know whether a new transfer to the school (as a migrant) repeated any grade unless the records accompany the student. The caution

FIGURE 4

BACKGROUND DOMAIN

Questions asked teachers concerning students	Migrant[a]	Former Migrant[b]	Non-Migrant[c]	Signif. $p < .05$
Repetition of one or more grades	25%	32%	17%	FM > NM
Ten or more days absent from school	18%	13%	16%	—
Health problems interfering with education	15%	13%	11%	—
Handicaps	12%	10%	12%	—
Economic needs interfering with education	20%	9%	7%	M > NM M > FM
Communicative problems interfering with education	29%	13%	8%	M > FM M > NM
Teachers give highest priority for special services	25%	17%	7%	M > NM
Family not supportive of school efforts	23%	10%	8%	M > FM M > NM

M = Migrant
FM = Former Migrant
NM = Nonmigrant

[a] Sample size between 238 and 283
[b] Sample size between 127 and 152
[c] Sample size between 138 and 207
Sample sizes are given in Appendix B

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

reserved for the "repeated a grade" question need not apply to other questions because all other questions were phrased to reflect whether the student's background affects his performance at the present time.

Social Domain

The social behavior of a student is an excellent indicator of how well adjustment to the demands and expectations of a particular environment have been made. A student's classroom behavior is the product of several interacting influences including self-concept, achievement, social skills, and the expectations of family and teachers. Problem behavior in students, whether withdrawn or overt, often reflects the student's unsuccessful attempts to deal with frustration caused by the varied expectations of the environment.

Teachers have been found to be quite accurate in identifying behavior problems in students. Shultz, Manton, and Alvia (1972) stated, "Each review tends to support the contention that teachers, either in isolation or in combination with other persons (other professionals, students), accurately identify problem behaviors in children" (p. 134). In an earlier review of the literature on teacher ratings and behavior disorders, Glavin and Quay (1969) concluded that the widespread use of teacher judgment in identifying maladjusted behavior is generally justifiable.

In the present study, teachers rated every student on each of the social behavior factors previously described in the instrumentation section. Differences among migrant groups on the four behavioral factors evaluated are shown in Figure 5.

FIGURE 5

SOCIAL DOMAIN

Questions asked teachers concerning students	Migrant[a]	Former Migrant[b]	Non-Migrant[c]	Signif. $p \leq .05$
Little or no voluntary participation in school activities	30%	31%	18%	M>NM FM>NM
Student withdrawal interfering with education	30%	17%	13%	M>NM M>FM
Student aggression interfering with education	21%	20%	26%	—
Behavorial problems requiring counselor referral	9%	3%	4%	M>NM M>FM

M = Migrant
FM = Former Migrant
NM = Nonmigrant

[a] Sample size between 241 and 269
[b] Sample size between 139 and 148
[c] Sample size between 181 and 192
Sample sizes given in Appendix B

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Social Domain (Cont.)

Significant differences were found between Migrants and both Former Migrants and Nonmigrants on three of the four social questions: Voluntary Participation in Activities, Withdrawal, and Behavioral Problems. Significantly fewer Migrant and Former Migrant students participated in school activities than Nonmigrant students. Migrant students, who often enter school at times other than the beginning of a semester, may identify less readily with extracurricular activities. Former migrants also find little motivation to voluntarily attend activities. While Former Migrants no longer move from school to school, they obviously have not yet adopted the lifestyle and "school-style" of the Nonmigrant.

When teachers were asked the question concerning whether the student was withdrawn to an extent that would interfere with education, Migrants were found to differ from all other students. Significantly more Migrants than Former Migrants or Nonmigrants were considered to be behaviorally withdrawn. Because of their mobility, the students who move with the crops may have more difficulty making friends and keeping up with the schoolwork. Withdrawal may be the general term applied to a multitude of problems that accompany a mobile lifestyle.

The Migrant student was found to have Behavioral Problems requiring counselor referral significantly more often than all other students. While the types of behavioral problems were not specified, the finding nonetheless suggests that schools having a substantial number of migrants are likely to have more behavioral problems requiring counselor referral than schools without migrants.

Ability Domain

Fluid ability involves the perception and manipulation of complex, abstract, and, for the most part, nonlanguage dependent relations (see Cattell, 1971). It is best represented by test items that do not depend on learned judgmental skills or special abilities. Two measuring devices for the evaluation of fluid ability were utilized in this needs assessment. The first measure was the Boehm Test of Basic Concepts which was administered to five-year olds. The second is Cattell's Culture Fair Test administered to seven, ten, thirteen, and sixteen-year olds. Each of the instruments provides a total score estimating the student's fluid ability level.

Figure 6 presents the average IQ scores on Cattell's Culture Fair Test for ten, thirteen, and sixteen-year olds. The Culture Fair Test is nonlanguage dependent. Nonmigrant students, with

FIGURE 6

AVERAGE IQ AGES 10, 13, AND 16
CULTURE FAIR TEST
(Nonlanguage Dependent)

	Migrant	Former Migrant	Non-Migrant
Average IQ	88	90	97

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

an average IQ of 97 (M=100, SD=15), are found to closely approximate the national norm. Former Migrant students showed an average IQ of 90, well below the national norm and the average IQ for Migrant students was 88, nearly one standard deviation below the national norm.

Notable Differences Among Age Groups*

Three of the four age groups tested with the Culture Fair Test showed significant differences between Migrant and Former Migrant students on fluid ability. For ages seven, ten, and thirteen, Migrant student scores were significantly below the Nonmigrant student scores. When Former Migrant and Nonmigrant students are compared, significant differences were found for two groups, the seven and sixteen-year olds, with Former Migrant students deficient in both cases.

Notable Differences Between Male and Female*

Significant differences on the Ability Domain are presented in Figure 7. Scores have been converted to z-score differences to facilitate interpretation of need. Under the assumption that a greater discrepancy between groups implies a greater need, the Figure should be read such that a greater score difference implies a greater need. Males and females are presented separately because of the possibility that needs may differ for males and females. For example, male Migrant students at age seven

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* For an explanation of the "Notable Differences" procedure, see Volume III, Appendix B, p. 132.

FIGURE 7

ABILITY DOMAIN

FLUID ABILITY
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.35*	-.83*	-.46*	-.55*		-.29
Age 10	-.48*	-.76*		-.73*	-.31	
Age 13		-.86*		-.46*		-.39*
Age 16	-.76*	-.59*	-.75*	-.39*		-.20

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

begin school with a deficiency in fluid ability when compared to Nonmigrant students. This discrepancy becomes more pronounced as the child becomes older. Female Migrant students at age seven have an even greater deficiency than do males. The young Migrant women continue to score very low on Fluid Ability compared to Nonmigrant women through age thirteen when many leave school. (The average age at which a Migrant student leaves school is fourteen.)

The needs of Former Migrant students are best understood by comparing them to Nonmigrant students. The deficiencies of male Former Migrant students approximate the deficiencies of male Migrant students. For female Former Migrant students, the deficiencies in fluid ability are less pronounced than for female Migrant students, although the deficiencies are still found to be significant for all age levels.

Summary — Ability Domain

Figure 8 provides a summary of findings for fluid ability. Migrant students scored nearly one standard deviation below Nonmigrant students on average IQ. Deficiencies on fluid ability for Migrant students increased with age. For females, Former Migrant students scored significantly below Nonmigrant students.

FIGURE 8

ABILITY DOMAIN

SUMMARY

Scale	Findings	Deficient Group
Agerage IQ (score on fluid ability, M=100, SD=15)	M<NM	10, 13, and 16-year age groups

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

NOTABLE DIFFERENCES AMONG AGE GROUPS

Scale	Findings	Deficient Group
Fluid Ability (z-score difference)	M<NM M<FM	Ages 7, 10, 16 Ages 7, 16

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

NOTABLE DIFFERENCES BETWEEN MALE AND FEMALE

Scale	Findings	Deficient Group
Fluid Ability (z-score difference)	M<NM increasing difference with age	Males
	FM<NM	Females

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Self-Concept Domain

Tradition recognizes three domains which concern the practicing educator: cognitive, affective, and psychomotor. Since the early work of Galton in England and Cattell in the United States, personality assessment has taken a backseat to intelligence and achievement testing. The last decade, however, has witnessed a resurgence of interest in understanding the way students feel about themselves and others, as well as increased recognition of the relationships between these feelings and the long exalted basic skills. Purkey (1970) wrote: "For generations wise teachers have sensed the significant and positive relationship between a student's concept of himself and his performance in school" (p. 11). Combs and Snygg (1959) placed self-concept at the forefront of their theory. They stated: "The most important complex of differentiations in the individual's perceptual field is his phenomenal self. What a person thinks and how he behaves are largely determined by the concepts he holds about himself and his abilities."

Rogers (1951) provides an excellent definition of self-concept which is compatible with the way this construct was conceptualized and measured in this study: "The self-concept of self-structure may be thought of as an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one's characteristics and abilities, the percepts and concepts of the self in relation to others and to the environment, the value qualities which are perceived as associated with experiences and objects, and goals and ideals which are perceived as having positive or negative valence" (p. 136).

Between the ages of five and twelve, the self-concept begins to crystallize. During this period (termed the "latency period" by many authors) the student matures considerably in the physical, cognitive, and affective areas. He confronts his environment with an increasingly stable set of feelings, attitudes, and behaviors which are based to a large extent, on his self-concept which is, likewise, stabilizing. As the student becomes older, he becomes more sure of what and whom he likes and dislikes, what he enjoys doing and what he dislikes doing, and how he sees his future. He begins to plan, and his aspirations and hopes tend to be consistent with the way he values himself which, in turn, is dictated in large part by how he perceives that others value him.

Self-Acceptance

The z-score differences on Self-Acceptance are presented in Figure 9. While for the most part the differences are neither great nor consistent, it should be noted that the gap between Migrant and Nonmigrant male students increases as students become older. Conversely, it appears that the difference in Self-Acceptance between Former Migrant and Nonmigrant female students appears to close with age.

FIGURE 9

SELF-CONCEPT DOMAIN

SELF-ACCEPTANCE
(_z_-score difference)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7				-.57*		.41*
Age 10		-.25*				
Age 13	-.27*			-.34		
Age 16	-.62*	.24	-.80*			.36*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

School Affiliation

The difference in *z*-scores for Migrant, Former Migrant, and Nonmigrant students are shown in Figure 10. The most marked differences occur in the thirteen and sixteen-year-old age groups. For the thirteen and sixteen-year olds, Migrant students scored significantly lower than Nonmigrant students. Former Migrant students scored significantly lower than Nonmigrant students. Migrant students scored significantly lower than Former Migrant students.

Self-Security

The results of the study of the Self-Security subscale may be seen in Figure 11. Former Migrant and Migrant students were found to differ little on Self-Security. Migrant students scored significantly lower than Nonmigrant students for almost every age group for both males and females. In summary, Nonmigrant students scored highest on Self-Security, with Migrant and Former Migrant students scoring significantly lower.

Social Maturity

The *z*-score differences for Social Maturity are presented in Figure 12. The only age groups at which there are consistent *z*-scores are thirteen and sixteen with no significant differences noted for these groups. For seven-year olds, however, a difference was noted for both males and females between Former Migrant and Nonmigrant students.

FIGURE 10

SELF-CONCEPT DOMAIN

SCHOOL AFFILIATION
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7		.29	-.30	-.54*		.83*
Age 10	-.23				-.37*	.27
Age 13	-1.82*	-1.92*	-.98*	-.92*	-.84*	-1.00*
Age 16	-1.77*	-1.84*	-.87*	-1.19*	-.90*	-.65*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 11

SELF-CONCEPT DOMAIN

SELF-SECURITY
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 5	-.38*	-.38*				
Age 7	-.40*	-.46*	-.40*	-.51*		
Age 10		-.65*	1.68*		-.23	-.59*
Age 13		-.54*	.29	-.52*	-.38*	
Age 16	-.59*	-.48*	-.70*	-.40*		

Differences less than $|.20|$ not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 12

SELF-CONCEPT DOMAIN

SOCIAL MATURITY
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 5	-.28					
Age 7	-.72*		-.75*	-.62*		.42*
Age 10		-.69*	-.42*		.29	-.53*
Age 13						
Age 16						

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Self-Concept Domain (Cont.)

Social Confidence

An evaluation was made of the Social Confidence of migrant students and the z-score differences are shown in Figure 13. All significant differences except one occurred for the thirteen and sixteen-year age group. For these two groups, significant differences were found between Nonmigrant students and both Migrant and Former Migrant students with Nonmigrant students scoring significantly better on the subscale.

Teacher Affiliation

In reviewing the z-score differences for Teacher Affiliation that are shown in Figure 14, it may be observed that the pattern which consistently places Migrant and Former Migrant students at a disadvantage still exists, albeit in a weak form.

Peer Affiliation

In the early teen-age years, Migrant and Former Migrant students were found to fare less well in Peer Affiliation than their Nonmigrant counterparts as may be seen in Figure 15. Migrants showed significant differences at age thirteen compared to Nonmigrant students while Former Migrants showed these deficiencies at age sixteen.

Self-Assertion

The final area evaluated in the Self-Concept Domain was Self-Assertion. The z-score differences for Self-Assertion are shown

FIGURE 13

SELF-CONCEPT DOMAIN

SOCIAL CONFIDENCE
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 10		-.34*		-.21	.21	
Age 13	-.71*	-.73*	-.86*			-.67*
Age 16	-.80*	-.98*	-.68*	-.80*		

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 14

SELF-CONCEPT DOMAIN

TEACHER AFFILIATION
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 10	-.22	-.36*				
Age 13						
Age 16	-.51*		-.28		-.23	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 15

SELF-CONCEPT DOMAIN

PEER AFFILIATION
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 10				-.53*		-.24
Age 13	-.47*	-.78*	-.29	-.34		-.63*
Age 16	-.69*	-.29	-.50*	-.35*		.46*

Differences less than $|.20|$ not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

in Figure 16. Because of the infrequency with which differences exceeded |.20| and were found to be statistically significant, no definitive statement may be made about intergroup differences.

Notable Differences Between Male and Female

Migrant males were found to more frequently have significant deficiencies than females for both Self-Security and Peer Affiliation.

When Former Migrant males were contrasted with Nonmigrant males, deficiencies were observed more frequently than when females were compared. The scales in which males faired more poorly were School Affiliation, Social Maturity, Social Confidence, and Self-Assertion.

Summary — Self-Concept

Figures 17 and 18 present a summary of the findings for the Self-Concept subscales. Migrant and Former Migrant students were found to score significantly lower than Nonmigrant students in School Affiliation, Self-Security, Social Confidence, and Peer Affiliation. While Migrant and Former Migrant students were deficient across all age groups for the Self-Security scale, the thirteen and sixteen-year age groups were the populations where the majority of the significant differences were found on the other subscales identified. The long run impact of these deficiencies on the adult life of Migrant and Former Migrant students may only be speculated, but it is obvious that these needs

FIGURE 16

SELF-CONCEPT DOMAIN

SELF-ASSERTION
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 13	.34		-.88*		.31	
Age 16	-.87*	-.24				-.18

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 17

SELF-CONCEPT DOMAIN

SUMMARY

NOTABLE DIFFERENCES AMONG AGE GROUPS

Scale	Findings	Deficient Group
Self-Acceptance	—	—
School Affiliation	M<FM<NM	Ages 13, 16
Self-Security	M<NM FM<NM	Ages 5, 7, 16 Ages 7, 16
Social Maturity	FM<NM	Age 7
Social Confidence	M<NM FM<NM	Ages 13, 16 Ages 13, 16
Teacher Affiliation	—	—
Peer Affiliation	M<NM FM<NM	Age 13 Age 16
Self-Assertion	—	—

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 18

SELF-CONCEPT DOMAIN

SUMMARY

NOTABLE DIFFERENCES BETWEEN MALE AND FEMALE

Scale	Findings	Deficient Group
School Affiliation	FM<NM	Male
Self-Security	M<NM	Male
Social Maturity	FM<NM	Male
Social Confidence	FM<NM M<NM	Male Female
Self-Assertion	FM<NM	Male

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

must be remediated if migrants are to be able to compete effectively in the larger world. With the aid of the resources provided by the students' needs assessment, educators will be additionally equipped to tackle the problems of the Migrant and Former Migrant student.

Achievement Domain

Reading and mathematics achievement are frequently identified as the pre-eminent objectives of education. The past decade has witnessed a polarization of opinion with one end of the continuum arguing for education to take a broader persepctive concerning its responsibilities and the other end demanding a return to the basics of reading, writing, and arithmetic. Whatever one's philosophical predilections as to the priority of reading and mathematics achievement within the larger context of education's role, tradition recognizes these two areas as the primary responsibilities of the schools.

At each age level, various reading and mathematical skills were measured. At the five-year-old level, a readiness test was used as an indication of potential for academic success. At other age levels, students took a comprehensive reading and mathematics achievement battery. In addition to the traditional achievement subtests, the thirteen- and sixteen-year-olds were examined on subtests dealing with career awareness. All students were tested with levels of the achievement batteries appropriate for their functioning level rather than for their grade placement level. Thus, if a ten-year-old was reading on the second grade level, he was given a second grade test even though he might be enrolled as a fourth grader.

Notable Differences Among Age Groups

Achievement Domain - Age 5

The z-score differences for five-year-old Migrant and Nonmigrant students are shown in Figure 19. (The sample size for five-year-old Former Migrants was too small to permit analysis to be performed.) Migrant males scored significantly below Nonmigrant males on subscales Rhyming, Visual Matching, School Language and Listening, and Quantitative Language. Migrant females scored significantly lower than Nonmigrant females on only two of the five scales — Rhyming and Visual Matching. Migrant females performed better than Nonmigrant females in Rhyming.

Reading Vocabulary - Ages 7, 10, and 13

Figure 20 presents the z-score differences for Reading Vocabulary. Migrant students performed significantly more poorly than did Nonmigrant students ages seven, ten, and thirteen. Former Migrants differed from Nonmigrants only at age seven.

Reading Comprehension - Ages 7, 10, and 13

The z-score differences for Reading Comprehension are shown in Figure 21. As was the case with Reading Vocabulary, significant differences were found between Migrant and Nonmigrant students with Migrant students not performing as well as Nonmigrant students. In contrast to the results of the Reading Vocabulary

FIGURE 19

ACHIEVEMENT DOMAIN

AGE 5
(*z*-score differences)

	Migrant Nonmigrant	
	Male	Female
Auditory Memory		.40*
Rhyming	-.49*	
Letter Recognition	-.48*	-.40*
Visual Matching	-.39*	-.49*
School Language and Listening	-.44*	
Quantitative Language	-.42*	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* p .05
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 20

ACHIEVEMENT DOMAIN

READING VOCABULARY
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.83*	-.76*	-.71*	-1.12*		-.36*
Age 10	-.35*	-.57*	-.28	-.31		.26
Age 13	-.42*	-.86*	-.31	-.85*		
Age 16						

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 21

ACHIEVEMENT DOMAIN

READING COMPREHENSION
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.79*	-.64*	-.64*	-.65*		
Age 10	-.40*	-.68*	-.42*	-.70*		
Age 13	-.86*	-.86*	-.70*	-.77*		

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

subscale, Former Migrant student scores on Comprehension were significantly lower than Nonmigrant student scores for all age groups.

Reading - Age 16

The differences in z-scores for Reading are presented in Figure 22. Significant differences were found between Migrant and Nonmigrant sixteen-year-old students with Migrant students performing more poorly than Nonmigrant students.

Mathematics Concepts - Ages 7, 10, and 13

The Migrant, Former Migrant, and Nonmigrant z-score differences for Mathematics Concepts are shown in Figure 23. Migrants were found deficient in the seven- and thirteen-year-age groups when compared to Nonmigrant students. Thirteen-year-old Former Migrant students also did not perform as well as did thirteen-year-old Nonmigrants.

Mathematics Problem Solving - Ages 7, 10, and 13

The intergroup comparison z-scores for Mathematics Problem Solving follows a pattern similar to that observed for Mathematics Concepts. In the thirteen-year-old-age group, both the Migrant and Former Migrant students performed significantly less well than Nonmigrant students. The differences between groups are presented in Figure 24.

FIGURE 22

ACHIEVEMENT DOMAIN

READING
(z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 16	-1.15*	-.74*	-.98*			

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 23

ACHIEVEMENT DOMAIN

MATHEMATICS CONCEPTS
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.38*	-.33*	-.30	-.19		
Age 10		-.51*		-.25	.31	.26
Age 13	-.32*	-.81*	-.66*	-.95*	-.34	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 24

ACHIEVEMENT DOMAIN

MATHEMATICS PROBLEM SOLVING
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.46*		-.37*	-.33		-.20
Age 10	-.72*		-.34	-.46*	.38*	.28
Age 13	-.60*	-.48*	-.61*	-.53*		

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Mathematics - Age 16

The z-score differences for Mathematics are shown in Figure 25. Nonmigrant students significantly outperformed Migrant students.

Career Planning - Ages 13 and 16

The three groups, Migrant, Former Migrant, and Nonmigrant, differed substantially on the Career Planning scale. At age 16, Migrant and Former Migrant students performed significantly more poorly than did Nonmigrants. For thirteen-year olds, Former Migrant student scores were significantly below Nonmigrant student scores.

When the Career Planning scores of Former Migrant students are compared with Migrant students' scores, results of a different nature are observed. Migrant students age 16 performed significantly better than their 16-year-old Former Migrant counterparts as Figure 26 illustrates.

Career Problem Solving - Ages 13 and 16

Significant differences among Migrant, Former Migrant, and Nonmigrant students were found for both age groups 13 and 16. Migrant students performed more poorly than did Nonmigrant students. Former Migrant students were also found not to score as high as Nonmigrant students. A summary of the results is presented in Figure 27.

FIGURE 25

ACHIEVEMENT DOMAIN

MATHEMATICS
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 16	-1.03*	-.75*	-1.04*	-.28		-.46*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* p<.05
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 26

ACHIEVEMENT DOMAIN

CAREER PLANNING
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 13		-.58*	-.40*	-.66*	.24	
Age 16	-.71*	-1.16*	-.35*	-.59*	.38*	.58*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 27

ACHIEVEMENT DOMAIN

CAREER PROBLEM SOLVING
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 13	-.36*	-.61*	-.35*	-.51*		
Age 16	-1.44*	-1.36*	-.80*	-.77*	.64*	.59*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

As was noted with Career Planning, Migrant students performed better than did Former Migrant students in the 16-year-old-age group.

Notable Differences Between Male and Female

Migrant males were found to have more significantly different scores (compared to Nonmigrant) than females on Achievement — five-year olds and Mathematics Problem Solving.

When compared to Nonmigrant students, male Former Migrant students did not perform as well as female Former Migrant students on Reading and Mathematics.

Migrant females were found to have notable deficiencies in Mathematics Concepts and Career Planning. In addition, Migrant females, contrary to most other results found in the study, had fewer deficiencies than males of the same group when contrasted against Former Migrants. Figure 28 summarizes these results.

Summary — Achievement Domain

The summary of all findings for the Achievement Domain are presented in Figure 29. On every scale, Migrant students scored significantly lower than Nonmigrant students for most age groups evaluated. Former Migrant students also had significantly lower achievement scores than did Nonmigrant students on all scales except Reading and Mathematics for sixteen-year olds. Male Migrant and Former Migrant students had more deficiencies

FIGURE 28

ACHIEVEMENT DOMAIN

SUMMARY

NOTABLE DIFFERENCES AMONG AGE GROUPS

Scale	Findings	Deficient Group
Reading Vocabulary	M<NM FM<NM	Ages 7, 10, 13 Age 7
Reading Comprehension	M<NM FM<NM	Ages 7, 10, 13 Ages 7, 10, 13
Reading	M<NM	Age 16
Mathematics Concepts	M<NM FM<M	Ages 7, 13 Age 13
Mathematics Problem Solving	M<NM FM<NM	Ages 7, 13 Age 13
Mathematics	M<NM	Age 16
Career Planning	M<NM FM<NM M>FM	Age 16 Ages 13, 16 Age 16
Career Problem Solving	M<NM FM<NM M>FM	Ages 13, 16 Ages 13, 16 Age 16

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 29

ACHIEVEMENT DOMAIN

SUMMARY

NOTABLE DIFFERENCES BETWEEN MALE AND FEMALE

Scale	Findings	Deficient Group
Achievement - 5-Year Olds	M<NM	Male
Reading Vocabulary	FM<NM	Female
Reading	FM<NM	Male
Mathematics Concepts	M<NM	Female
Mathematics Problem Solving	M<NM FM<M	Male Female
Mathematics	FM<NM FM<M	Male Female
Career Planning	M<NM	Female

M = Migrant
FM = Former Migrant
NM = Nonmigrant

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

than Nonmigrant students on Achievement — five-year olds, Reading, Mathematics Problem Solving, and Mathematics. Female Migrant and Former Migrant students scored lower than Nonmigrant students on Mathematics Concepts, Career Planning, and Reading Vocabulary. Female Migrant students performed better for more age groups than male Migrant students when Former Migrant students were used as a basis for comparison.

When the magnitude of the _z_-score differences between male Migrant and Nonmigrant students are compared, the differences for five-year olds are in the order of -.39 to -.49. For the seven- to thirteen-year olds, the differences ranged from -.42 to .-86 in Reading Vocabulary and Reading Comprehension. By the time the students reached age 16, the difference had risen to -1.15 in Reading. Thus, the deficiencies noted for Migrant students compared to Nonmigrant students increase with age, placing Migrant students at an increasing disadvantage in their educational environment.

Gross Motor Domain

Gross motor development is a good indicator of physical maturation and the quality of the environment to which an individual has been exposed. Though the role of gross motor development as a determinant of cognitive development remains largely unexplored, the limited evidence which is available tends to support a relationship between the two, particularly in younger students. Pediatricians have long recognized the association between gross motor performance deficiencies and central nervous system (CNS) inefficiency.

Of the eight Gross Motor factors, Balance is most closely related to central nervous system efficiency. Speed, Explosive Power, Dynamic Arm Strength, and Static Arm Strength are related more to maturation and growth considerations, while Cardiovascular Endurance provides an index of the efficiency of the heart and lungs and is what is generally meant when someone refers to as "being in shape." Flexibility and Agility are good indices of muscle tone. Both overweight and underweight conditions contribute to low scores on these factors.

Speed

The *z*-score differences for speed are shown in Figure 30. No consistent pattern of significant differences was observed for any of the intergroup comparisons.

FIGURE 30

GROSS MOTOR DOMAIN

SPEED
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.29	-.50*				
Age 10	.34					.24
Age 13	-.52*	.26	-.55*			
Age 16						

Differences less than $|.20|$ not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Explosive Power

Explosive power, an indication of the general nutrition and growth of the student, was found to be deficient for seven-year-old male and female Migrant students as compared to Nonmigrant students in that age group. These differences disappeared for older students. Figure 31 illustrates these differences.

Cardiovascular Endurance

Heart and lung efficiency is measured by means of Cardiovascular Endurance. For the group of 13-year-olds, Migrant and Former Migrant students did not perform as well as their Nonmigrant age counterparts. The *z*-score differences are provided in Figure 32.

Flexibility

Significant differences were found on Flexibility for 13 year olds just as was true on Cardiovascular Endurance. Flexibility scores, an index of muscle tone, were significantly lower for Migrant than for Nonmigrant students. Figure 33 presents a summary of the *z*-score differences on Flexibility. Former Migrant students, as well, did not fulfill the expectations set for them by the Nonmigrant students.

FIGURE 31

GROSS MOTOR DOMAIN

EXPLOSIVE POWER
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.47*	-.36*				
Age 10	.39*					
Age 13						
Age 16			-.63*		.51*	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 32

GROSS MOTOR DOMAIN

CARDIOVASCULAR ENDURANCE
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	.22					
Age 10	-.20	.22	-.25			.33
Age 13	-.71*	-.60*	-.29	-.49*	-.41*	
Age 16	.28		-.21		.49*	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 33

GROSS MOTOR DOMAIN

FLEXIBILITY
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.68*	-.26				
Age 10	-.25	.37*	-.28			.46*
Age 13	-.63*	-.82*	-.62*	-.35*		-.47*
Age 16	-.42*	.25			-.51*	

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Balance

The *z*-score differences for Balance are shown in Figure 34. While the differences are not great, Migrant and Former Migrant students appear to be at a disadvantage in Balance when compared with Nonmigrant students.

Agility

Intergroup comparisons for Agility, reported in Figure 35, indicate no consistent pattern of differences in *z*-scores.

Dynamic Arm Strength

Dynamic Arm Strength is an index of maturation and growth. For 13 year olds, the same group found deficient on Cardiovascular Endurance and Flexibility, the Dynamic Arm Strength scores of Migrant and Former Migrant students were significantly below the scores of Nonmigrant students. Results are presented in Figure 36.

Static Arm Strength

The *z*-score differences of Static Arm Strength are given in Figure 37. The results of this substudy are mixed and no discernible, consistent patterns may be found in the data.

Notable Differences Between Male and Female

Using Former Migrant students as a basis of comparison, male Migrant students were found to more frequently have

FIGURE 34

GROSS MOTOR DOMAIN

BALANCE
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.27	-.24				
Age 10	.23	-.34		-.25		
Age 13	-.74*	-.22	-.80*	-.31		
Age 16				-.42*		-.45*

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 35

GROSS MOTOR DOMAIN

AGILITY
(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7		-.25				
Age 10	-.32		-.25			
Age 13	.25	.23				
Age 16						

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 36

GROSS MOTOR DOMAIN

DYNAMIC ARM STRENGTH
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.31					
Age 10						
Age 13	-1.66*	-.94*	-1.50*	-1.16*	.21	-.32
Age 16		-.42*				

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 37

GROSS MOTOR DOMAIN

STATIC ARM STRENGTH
(*z*-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.24	-.26				
Age 10	-.25	-.26	.22	-.42*	-.46*	
Age 13		.36	.82*		-.72*	.28
Age 16	.32		.37*	.31		-.26

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

significantly deficient scores than female Migrant students on Explosive Power and Static Arm Strength. These male Migrant students also did not perform as well as male Nonmigrant students on Flexibility and Balance. More significant differences may be noted on these two scales for males than females when Migrant and Nonmigrant students are compared.

Male Former Migrant students showed more significant differences than female Former Migrant students when compared to Nonmigrant students on three scales: Speed, Explosive Power, and Static Arm Strength.

Female Migrant students had more deficiencies than did male Migrant students on the Balance and Dynamic Arm Strength scales. The differences were observed when Migrant and Former Migrant students were contrasted.

Female Former Migrant students showed more significant differences than male Former Migrant students on only one scale, Cardiovascular Endurance, a difference observed when Former Migrant students were compared with Nonmigrant students.

Summary — Gross Motor Domain

Significant differences were found between Migrant and Nonmigrant students on four of the eight scales: Explosive Power, Cardiovascular Endurance, Flexibility, and Dynamic Arm Strength. Migrant students performed more poorly on all four scales. Three of the four significant differences occurred for the 13-year-old group. One occurred for the 7-year age group.

Former migrants performed significantly more poorly than Nonmigrant students on two scales, Flexibility and Dynamic Arm Strength. Both of these occurred at age 13. Figures 38 and 39 summarize the results.

More deficiencies were found for male Migrant and Former Migrant students than for females.

FIGURE 38

GROSS MOTOR DOMAIN

SUMMARY

NOTABLE DIFFERENCES AMONG AGE GROUPS

Scale	Findings	Deficient Group
Speed	—	—
Explosive Power	M<NM	Age 7
Cardiovascular Endurance	M<NM	Age 13
Flexibility	M<NM FM NM	Age 13 Age 13
Balance	—	—
Agility	—	—
Dynamic Arm Strength	M<NM FM<NM	Age 13 Age 13
Static Arm Strength	—	—

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 39

GROSS MOTOR DOMAIN

SUMMARY

NOTABLE DIFFERENCES BETWEEN MALE AND FEMALE

Scale	Findings	Deficient Group
Speed	FM<NM	Male
Explosive Power	FM<NM M>FM	Male Male
Cardiovascular Endurance	FM<NM	Female
Flexibility	M<NM	Male
Balance	M<NM M<FM	Male Female
Dynamic Arm Strength	M<NM	Female
Static Arm Strength	FM<NM M<FM	Male Male

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Fine Motor Domain

Fine motor coordination is a particularly sensitive indicator of central nervous system efficiency with preschool age children. During the primary grades, fine motor coordination loses its prevalent position as an indicator of CNS maturity due primarily to the increasingly large role that experience plays. Knobloch and Passamanick (1974) state: "The minor disorganizations are easiest to detect in infancy, when the rapidity of developmental changes causes lesser impairments to distort normal behavior definitively. Compensation for the disabilities occurs with increasing maturity" (p. 212). When fine motor coordination is normal in preschool age students, the odds are 20 to 1 that the students will evidence cognitive development within the normal range. For students with fine motor deficiencies, the odds drop to 4 to 1 and for students with marked or severe fine motor deficiencies, the odds are only 1 to 1 that the student will perform in the normal range (i.e., IQ 75 or above) on cognitive measures (Knobloch and Passamanick, 1974).

One of the most important factors which determine the probability of low cognitive performance, given deficient fine motor coordination in infancy, is the socioeconomic status of the family. Students with fine motor coordination problems from low socioeconomic status (SES) families are at greater risk than students with fine motor deficiencies from higher SES families.

Two Fine Motor factors have been included in this assessment. Hand-Eye Coordination was measured by a bead stringing task scored for time and number of misses. Digital coordination was measured by a task in which the student tied a rope into five knots and then untied the rope. This task was done both in front and behind the back and was also timed.

Hand-Eye Coordination

The age groups 7 and 13 were found to be deficient in Hand-Eye Coordination when Migrant students were compared with Nonmigrant students. Since the same age groups were found deficient on some of the Gross Motor scales, there is evidence of an intercorrelation between the Fine and Gross Motor scales. For both age groups, Migrant students did not perform as well as Nonmigrant students as can be seen in Figure 40.

Digital Coordination

The *z*-score differences for Digital Coordination are shown in Figure 41. Although there was no consistent pattern above that age, 7-year-old Migrant and Former Migrant students performed more poorly than did Nonmigrant students.

Notable Differences Between Male and Female

All six comparisons showed more significant differences occurring for males than for females. On Hand-Eye Coordination

FIGURE 40

FINE MOTOR DOMAIN

HAND-EYE COORDINATION
(z-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.65*	-.35*	-.88*	-.23	.23	
Age 10			.46*		-.35*	
Age 13	-.46*	-.37*		-.23	-.36*	
Age 16						

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 41

FINE MOTOR DOMAIN

DIGITAL COORDINATION

(_z_-score differences)

	Migrant Nonmigrant		Former Migrant Nonmigrant		Migrant Former Migrant	
	Male	Female	Male	Female	Male	Female
Age 7	-.93*	-.20	-1.52*	-.22	.59*	
Age 10	.26	.29			.35*	.33
Age 13	-.44*		-.60*			.22
Age 16		-.29	.53*		-.69*	-.29

Differences less than |.20| not reported
Sample sizes given in Appendix B
Negative sign indicates deficiency for first group reported in column.
* $p < .05$
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

and Digital Coordination, male Migrant students were found to have more deficiencies than females when Migrant students and Nonmigrant students were compared. The same finding was evident in the comparison of Former Migrant and Nonmigrant students.

Male Migrant students, when compared to female Migrant students, were found to be more deficient on the Digital Coordination scales. These differences occurred when Migrant and Former Migrant students were contrasted.

Summary — Fine Motor Domain

Figures 42 and 43 provide a summary of the findings for the Fine Motor Domain. Nonmigrant students performed significantly better than Migrant students in the 7- and 13-year-age group on Hand-Eye Coordination.

Male Migrant and Former Migrant students were found to have more significant differences in performance than females on both Fine Motor scales.

FIGURE 42

FINE MOTOR DOMAIN

SUMMARY

NOTABLE DIFFERENCES AMONG AGE GROUPS

Scale	Findings	Deficient Group
Hand-Eye Coordination	$M < NM$	Age 7

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

FIGURE 43

FINE MOTOR DOMAIN

SUMMARY

NOTABLE DIFFERENCES BETWEEN MALE AND FEMALE

Scale	Findings	Deficient Group
Hand-Eye Coordination	FM<NM	Male
	M<FM	Male
Digital Coordination	M<NM	Male
	FM<NM	Male
	M<FM	Male

M = Migrant
FM = Former Migrant
NM = Nonmigrant
(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

SECTION B

CURRENT AND CRITICAL NEEDS OF MIGRANT STUDENTS

CHAPTER 1

NATIONAL PERSPECTIVE

The poverty that characterizes a migrant family's daily existence is not unique to the migrant life. There is perhaps no other occupational group in the United States that is so homogeneously disadvantaged as the migratory labor force, however, because of the combination of poverty, disruptive mobility, and lack of social services. It is estimated that nationally 4.4 percent of White students, 20.7 percent of Black students, and 25 percent of Spanish-speaking students are in families with less than $3,000 annual income. In all, there are over four million students who live in poverty. Although the focus of this study is on migrant students, many findings generalize to all disadvantaged students, and as such, document a serious social problem.

In 1970, about 4.4 million children, or 6.2 percent, lived in families where the head of the household did not work.* Another 12.1 million were in houses where the breadwinner worked only part of the year. Thus, a total of 16.5 million children, or 23 percent, were in families in which the head was either unemployed or underemployed. While unemployment is a tragedy in and of itself, the products of this predicament are intolerable. The Senate Select Committee on Nutrition and Human Needs estimates that there are 25.5 million Americans living on incomes insufficient to sustain a nutritionally adequate diet.* About 10.5 million of the Americans with an inadequate diet are under age 18. Of those who need food assistance and do not receive it, 3.8 million are children. Of the 9.3 million school children eligible for free and reduced-price school meals, 7.5 million receive school lunch and only 520,000 receive school breakfast.

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* Except where otherwise noted, the statistics used in this chapter are derived from U. S. Census Bureau Reports resulting from the 1970 Decennial Census.

The American Academy of Pediatrics estimates that 18 million students under age 17 have never seen a physician and an additional 21 million see a doctor less often than once a year. Some specific indications of the magnitude of this problem are as follows:

- The report of the 1971 White House Conference on Children and Youth notes that about 12 million children need special care for eye conditions, more than 3 million are afflicted with speech impediments, over 2 million have untreated orthopedic handicaps, and 75 percent of all children in families with annual incomes of less than $2,000 and 66 percent in families earning less than $5,000 have never seen a dentist.

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* U. S. Senate Select Committee on Nutrition and Human Needs, Committee print, Hunger in the Classroom: Then and Now, January, 1972.

- The U. S. Department of Health, Education, and Welfare in a survey in the 1960's reported that among young children age 6-11, one out of 12 had a speech defect, one out of nine had faulty vision, and that among children age 5-14, one in four had never seen a dentist, with poor children having an average of 3.5 decayed, untreated teeth.

Recognizing the high correlation between the quality of the home environment and subsequent educational achievement, this disparity is paramount. Minority group students are from four to seven times more likely to be below the poverty level than are White students.

In addition to money, parents' educational background provides another index to both the home environment and educational advantage or disadvantage. More than 6.5 million or 11 percent of all school age children live in families where the head of the household has less than an 8th grade education and 23.2 million or 39 percent of all school age children have parents who failed to complete high school. In terms of median years of school completed, the White population over 25 has completed 12.1 years, Blacks 9.8 years, and Spanish-speaking Americans 9.6 years. It has been estimated that nine out of ten migrant children never enter high school and only one of these ten graduates.* Some statistics highlight the current plight of the Mexican-American:

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* Andy Porras, "Missing Migrant Children," La Cámara, [n.d.], pp. 16-18, quoting J. Edwardo S. Cabrera.

- Fifty-five percent of Mexican-Americans are not high school graduates as compared to 19 percent of Other White Americans.
- Five percent of Mexican-Americans (only three percent of Spanish-speaking Americans in nonmetropolitan areas) are enrolled in college.

In 1968, it was estimated that 10 percent of the students enrolled in the nation's public schools had moderate to severe emotional problems and that only 5 percent of the students needing psychiatric care received it. One of every three poor children has serious emotional problems that require treatment.

As the report of the 1971 White House Conference on Children and Youth stated:

> These and other health needs are not being met because of inadequate preventive diagnostic and treatment services in low-income areas, particularly in major cities. Children from these areas often enter school without previous medical or dental care. At this time, in many outpatient departments children are waiting 5 to 7 hours to be seen hurriedly by a physician. When health problems are discovered through school examinations, community agencies often lack the resources to provide treatment and follow-up care.

The above statistics indicated both the magnitude and the complexity of the health, food, family education, employment, and income problems of a substantial segment of this nation's school children. The U. S. Office of Education has classified almost 17 million children as disadvantaged. The criteria used by U.S.O.E. are somewhat restricted, however, and a better estimate is that between 20 percent and 30 percent of this nation's children begin school with low probability of success.

A reviewer of the past decade of compensatory education programs is immediately struck by the all-encompassing emphasis on reading and mathematics programs and by the repeated reports of the ineffectiveness of these programs. Educators, legislators, and laymen have succumbed to the fallacy that the major difference between disadvantaged and advantaged students is that disadvantaged students have low reading and mathematics scores. The assumption which undergirds most compensatory education programs is that by eliminating differences in reading and mathematics achievement, the disadvantaged student will somehow be given a more equitable position in the race for success and happiness. The logic of this strategy is solid if one ignores the fact that low reading and mathematics achievement are just two of the numerous consequences of poverty. One might argue that the long-term implications of central nervous system inefficiency, as reflected in low fine and gross motor performances, and the fundamental feelings of inadequacy, insecurity, incompetence, and indecisiveness attendant to a negative self-concept are more awesome and far reaching for both students and society than are low reading and mathematics test scores. By focusing on low academic achievement to the virtual exclusion of other aspects of a student's development, we have unwittingly established as the primary culprit what in reality is but one of several consequences of poverty. As will be seen in the following chapter, the effects of poverty on child development are pervasive, and it is a cruel hope that these effects can be nullified through traditional intervention programs.

CHAPTER 2

PRIORITY NEEDS OF MIGRANT SUBPOPULATIONS IN ARIZONA

Throughout this study, "need" has been defined as a discrepancy in performance between migrant and nonmigrant students. It was pointed out in a previous section that this methodology tends to systematically underestimate the "needs" of migrant students because the individuals comprising the nonmigrant sample employed in this study are themselves below the national norms on many of the factors. As a consequence, the magnitude of need reported in this section is most likely very conservative.

Seven domains (Background, Social, Ability, Self-Concept, Achievement, Gross Motor, and Fine Motor) of student characteristics and behavior were investigated in this study. In this section, an overview of the needs of several migrant subpopulations is presented which summarizes, for the most part, across age and sex. In those cases in which selected needs are dramatically more pronounced for one sex or age level, the sexes and/or age levels are discussed separately. The goal of this section is to present a broad picture of migrant students' needs, summarizing and integrating the material presented in the previous section.

Needs of Migrant and Former Migrant Students

In this needs assessment study, no attempt is made at determining which need is more critical. Such a determination would require a thorough understanding of the causal relationships among a broad range of human development factors. Only then could it be argued, for example, that social confidence and cardiovascular endurance among ten-year olds are critical factors in determining a healthy, productive, and well adjusted adulthood. Unfortunately, it is not known whether more debilitation exists when a seven-year old has a low self-concept or low fine motor coordination, nor is it understood how self-concept and fine motor coordination relate to one another and to academic achievement.

In the absence of knowledge regarding causal relationships, a post-hoc criterion for prioritizing needs must be adopted. The criterion selected for this study is the magnitude of differences between Migrant, Former Migrant, and Nonmigrant students expressed in standard deviation units. The existence of "need" is inferred for a factor when Migrant or Former Migrant students score significantly below Nonmigrant students. Likewise, the existence of greater need is inferred for those factors on which Migrant and Former Migrant students are lowest in comparison with Nonmigrant students, and that lesser need exists when Migrant and Former Migrant students have similar average scores. Such a criterion gives each factor an equal opportunity of being selected as a high priority, i.e., there has been no attempt to weight the factors in proportion to some value system. One might argue that static arm strength and reading achievement among senior high students are not of equal importance (i.e., value), and perhaps, in this case, most people would agree; however, not all such comparisons are as clear cut. Consequently, imposing a differential weighting system has been avoided; the focus is on the unadjusted differences between Migrant, Former Migrant, and Nonmigrant students. These differences have been translated into needs and given priority according to magnitude of difference. It is left to the reader to interpret these findings in light of his or her values and experience.

For purposes of Chapter 2, Migrant and Former Migrant students have been combined because differences between these subpopulations are significantly less than differences between them and Nonmigrant students. It has been shown previously that the small number of significant differences between Migrant and Former Migrant students reinforces one important conclusion of this study — that poverty, especially when accompanied by a migrant lifestyle — is the primary culprit in retarding students' development. Former Migrant students are in most cases only slightly higher than Migrant students in terms of test scores. This advantage may simply reflect the slightly higher socioeconomic position of Former Migrant students.

Before presenting an analysis of the seven domains, a brief note is in order concerning age and sex differences. There is a tendency for older migrant students to have greater needs than their younger counterparts. A cumulative deficit pattern is evident between Migrant and Nonmigrant students and the needs become more pronounced as a function of age.

Background Domain

With respect to the Background Domain, one of the greatest needs for the Migrant and Former Migrant students is Communication Skills. It is important to note, however, that many more Migrant than Former Migrant students have problems in communication. It is interesting to consider the possibility that as a family acquires English language competence, they are much more likely to forsake the migrant life.

It is surprising to note that the number of absences from school are substantially the same among Migrant and Nonmigrant students. The probability of a student having repeated a grade is greatest for Former Migrant students, with about one in three repeating one or more grades. More than twice the number of Migrant students than either Former Migrant or Nonmigrant students have economic needs which interfere with their learning. As might be expected, Migrant students experience a problem with family support of school work more than twice as often as Former Migrant or Nonmigrant students. Recognizing this need, teachers give priority for special services to three times as many Migrant students as Nonmigrant students.

In general, a review of the Background Domain statistics reveals a sharp disparity between Migrant and Nonmigrant students with Former Migrant students usually between the two. No single aspect of a Migrant student's background can be identified as the major influence on his development; recognition must be given to the constellation of factors which interact to lower the Migrant student's probability of breaking out of the poverty cycle. Perhaps the most tragic characteristic of poverty is its seemingly unassailable tendency to visit upon the children what a generation earlier was suffered by the parents. The effects of poverty on a child's development collectively represent the mechanism by which the cycle of poverty is sustained and perpetuated.

Social Domain

Migrant students have more behavioral problems than Nonmigrant students, in the opinion of their teachers, and are more likely to be referred to a counselor for these problems. As might be expected, Migrant students are more likely to be withdrawn than Nonmigrant students. Migrant and Former Migrant students were also found to be deficient in Voluntary Participation in school activities. It is logical to speculate that the failure of Migrant students to participate as much as Nonmigrant students in school activities may play a large part in the differences noted on other areas such as School Affiliation.

Ability Domain

Fluid Ability, i.e., the ability to perceive abstract relationships, is an important determinant of academic success. Although Migrant students enter school with a Fluid Ability somewhat lower than their Nonmigrant peers, they fall farther and farther behind them with each successive year of schooling. The cumulative deficit pattern which characterizes the development of Fluid Ability among Migrant students is additional evidence that the performance levels on the Culture Fair Tests are sensitive to environmental influences. This finding is in opposition to the theory proposed by Jensen (1974) in that it indicates that Fluid Ability or Abstract Reasoning ability is _not_ primarily genetically determined, but, rather, is profoundly effected by the experiences an individual has, particularly in the first dozen years of life. The cumulative deficit finding is all the more striking when one realizes that a selection factor is operating and only the most academically talented and successful migrant students remain in school at thirteen and sixteen years of age.

Self-Concept Domain

Upon entry into public school, new expectations are made of the Migrant student. He is frequently unable to meet them adequately. Both the Migrant student's teachers and peers make daily, frequently unconscious, appraisals of his performance and worth. These appraisals, whether positive, negative, or indifferent, are internalized by the Migrant student. A fundamental attitude toward the self develops out of such daily interactions and appraisals, and this attitude or self-concept exercises an influence on a student's behavior. A student is in a very real sense taught how to view himself. If he fails repeatedly at tasks which teachers and peers consider extremely important (e.g., reading), he learns to doubt his own worth. If failure extends to social interactions such as sports, self-doubt is reinforced and solidified. The findings in the report suggest that during the primary grades the seeds of self-doubt are planted and grow steadily throughout the remaining school years.

Once again, the deficit pattern for Migrant and Former Migrant students appears in the Self-Concept Domain. Although only one factor showed differences between Migrant and Nonmigrant students at the five and seven year old levels, differences appear on three factors for the thirteen and sixteen year old students. The greatest differences appear in School Affiliation, Self-Security, and Social Confidence.

Achievement Domain

As might be expected, Migrant students exhibit substantial needs in the Achievement Domain. Five year old males begin school with deficiencies in Auditory Memory, Rhyming, Visual Memory, School Language, and Quantitative Language. Large needs in both reading and mathematics achievement appear among Migrant students at all ages. Furthermore, Migrant students at ages thirteen and sixteen manifest a striking need to acquire career information that may open for them a greater variety of career choices.

Gross Motor Domain

Differences on the Gross Motor factors overwhelmingly favor Nonmigrant students over Migrant students. Migrant students show substantial needs on the Explosive Power, Cardiovascular Endurance, Flexibility, and Dynamic Arm Strength factors. Migrant students show needs on four of eight Gross Motor Domain factors. The most noticeable differences occur among both males and females at the thirteen year age level. Former Migrant students showed needs in Flexibility and Dynamic Arm Strength while differences between Migrant and Former Migrant students were not significant. Although the specific causes of Gross Motor retardation go beyond the scope of this study, the possibility that nutritional and health factors are implicated as causal agents needs serious consideration. The behavioral fallout of Gross Motor inefficiency includes listlessness, clumsiness, general fatigue and apathy, all of which negatively influence a student's capacity for school work in addition to an erosion of self-concept. Clearly, further study of the relationship between nutrition and health factors and Gross (and Fine) Motor development is called for, with additional work invested in evaluating the relationship between motor development and academic success. As a first step, an evaluation of the health status of Migrant and Former Migrant students should be completed along with a survey of the programs and projects which have been established to remediate the deficiencies.

Fine Motor Domain

Migrant students show substantial needs on the Fine Motor Domain, particularly at the seven and thirteen year levels. Although significant differences have been noted between Migrant and Nonmigrant students in Hand-Eye and Digital Coordination, Former Migrant male students have significant needs in only Digital Coordination.

Summary

Because the needs of Migrant students cut across all domains and are so substantial, it is difficult to isolate one or two needs that stand out in importance above the others. Without knowledge of the causal relationships among domains, it is impossible to decide, with any assurance, that one aspect of a student's development should receive higher priority than another. Much educational program planning focuses on the symptoms while the more fundamental problems remain unaddressed. For example, a student's academic achievement can be viewed as the hands on a clock. When the clock repeatedly gives the wrong time, it is assumed that the clock is broken and no attempt is made to fix the clock simply by setting the hands to the appropriate time. If the analogy is correct and low academic achievement is but one symptom of more fundamental difficulties in a student's development, then simply adjusting a student's achievement level will be as inconsequential as adjusting the hands on a broken clock. To know which needs are most critical requires knowledge of the causal interrelationships among domains. The fact that such knowledge is not yet available complicates and reduces reliability of any attempts to prioritize needs. An admittedly preliminary attempt at identifying some of the causal relationships among the factors considered in this needs assessment is presented in Figure 44.

The hypothetical schemata of the factors and their causal relationship suggests that poverty exercises a negative influence on the migrant mother, both prior to and during pregnancy. These influences are registered through poor health care, poor prenatal care, and malnutrition. A child born under these conditions is more likely to be premature, have low birth weight, be malnourished, and become experientially deprived. Both the complications surrounding the child's last intrauterine trimester and the experiential deprivation suffered by the child in the first five to seven years of life contribute to a performance deficiency characterized by poor sensory functioning, low fluid ability, poor language development, and poor fine and gross motor development. These deficiencies contribute to low self-concept and low academic performance which interact and, in a mutually reinforcing fashion, lead to general developmental retardation and inadequate psychosocial development.

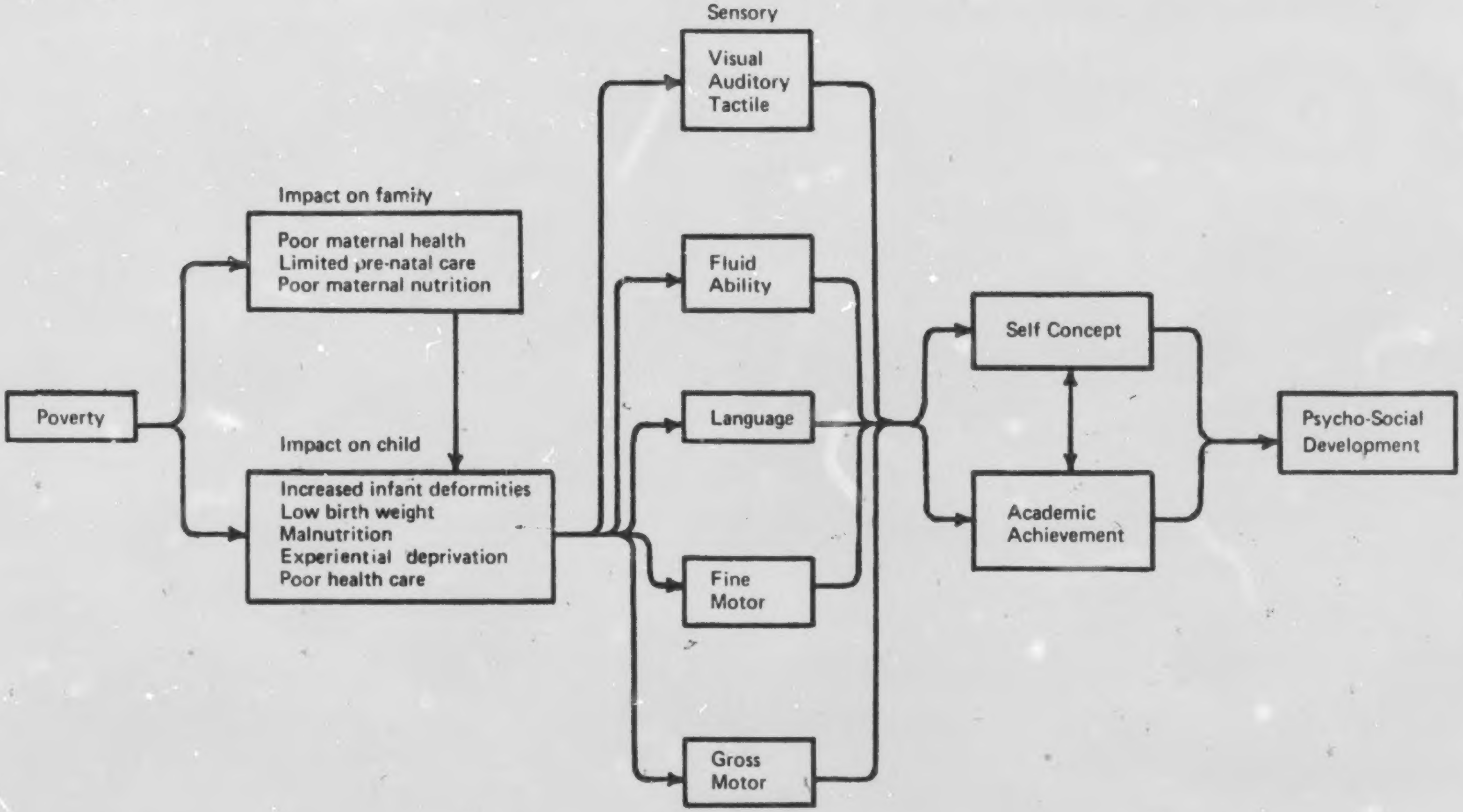

Figure 44. Hypothetical Schemata of How Poverty Contributes to the Determination of the Psychological and Social Development of the Child

CHAPTER 3

CONCLUSION AND RECOMMENDATIONS

This needs assessment has examined a number of pieces to a puzzle in the hope of fitting them together into an overall picture reflective of the effects of migrancy and poverty on human development. The results of this investigation suggest that such effects are pervasive and that the implications for society in general and public education in particular are extremely disquieting. Public education cannot, by itself, solve the problems of disadvantaged students. To a large extent, the massive expenditures for compensatory education have been only a modestly successful exercise in symptomatic relief.

It is evident that the conditions of poverty exercise a cumulatively depressive effect on virtually every aspect of a migrant student's development. Migrant students are at risk with respect to a wide spectrum of developmental anomalies which interact across the traditional domains of biochemical, sensory motor, cognitive, affective, psychomotor, and social performance.

At its root, compensatory education is designed to foster equality of opportunity through the presumed effects that improved reading and mathematics achievement exercises on adult occupational performance and "quality of life." The results of this study make abundantly clear that equality of educational opportunity is insufficient. What is needed is equality of developmental opportunity. Whereas the former is restricted to traditional educational concerns, the latter dictates that the developmental environment of the migrant student is interlaced with a complexity of hazards, and the odds of a student moving unscathed through such an environment are astronomical. Among the hazards which face migrant students are: poor prenatal nutrition and limited prenatal care; risk of low birth weight and high risk of infant mortality; more frequent and persistent illnesses; poor nutrition throughout the early years; substandard housing; repeated exposure to toxic substances; essentially nonexistent health and dental care; frequent family disorganization; limited constancy in relationship with peers and institutions, such as school, church, and recreation facilities; retarded physical growth; and poor fine and gross motor development; all of which result in progressively poorer academic achievement, progressively lower self-concept scores, increasingly frequent behavior problems, and retarded social development. One might argue that any one or two of these developmental hazards would prove a formidable problem, but the stark reality is that these hazards by their nature appear in multiples creating, from a traditional intervention perspective, a virtually unassailable constellation of mutually reinforcing negative influences. The equalization of developmental environments is a task far beyond the resources and charter of public education and is a genuinely long-term process requiring perhaps three or four generations.

The realities dictate that nothing less than a massive multidisciplinary attack is needed to even partially equalize the developmental environments of migrant and nonmigrant students. By emphasizing the equalization of developmental opportunity, the many facets of human development are constantly kept in focus. It must be re-emphasized that the schools acting alone are singularly inadequate to the task of equalizing developmental opportunity. Existing agencies could possibly make recognizable progress toward equalizing developmental opportunity, but the continued uncoordinated and frequently duplicating delivery mechanisms must be consolidated or at least unified under a common set of goals and objectives.

There are several recommendations for improving the quality of life relating to migrant students in Arizona. In order to increase the goal of improved academic achievement, the following student goals need immediate attention:

- Health
- Nutrition
- Self-Concept
- Achievement

There are various strategies or methods for attaining the goal of proper health care. There should be close cooperation with the various heads of migrant education programs and local health agencies as well as civic organizations dedicated to improving the health of migrant students and their families.

Early identification of health problems with thorough screening procedures appears to be adequate at present. What is needed is consistent follow through once a problem area has been diagnosed. Greater effort should be made to provide a system which constantly keeps close supervision over migrant children throughout the year. Increased use of the Migrant Student Record Transfer System's health form could assist in continuous screening procedures.

Dental care for migrant students is a need recommended by all health and education personnel. Dental hygiene should be taught at all levels of schooling.

The second pupil goal is the study of nutrition which would significantly affect the diets as well as the health of migrant students. The school lunch program should be expanded throughout Arizona in order to provide well-balanced meals which many migrant students lack. Coincidentally, the implementation of a free or reduced price breakfast program is strongly recommended since many children, especially those economically disadvantaged, arrive at school without food and nourishment to begin their daily schooling. Finally, there should be adult education for parents to present nutrition information. This would allow the whole family to understand and reinforce proper diets.

The third goal necessary to increase the migrant student's ability to achieve in school is the development of a positive self-concept. The background and social domains along with the self-concept domain amply illustrate the necessity for educators to provide situations in which migrant children can feel a definite sense of self-worth. Once a child begins to feel a sense of worthiness, success in school can follow.

To develop a meaningful program for enhancing the migrant child's self-concept and achievement, the components discussed below are recommended. These components, introduced in the school system over a reasonable period of time, will undoubtedly enhance the migrant child's self-concept. This, in turn, will provide the basis for enhancing school achievement goals. When fully implemented, these services will lead to the ultimate goal of providing migrant children with CHOICES NOT CIRCUMSTANCES.

Although the public schools cannot be expected to act alone in remediating the educational problems of migrant students, no other single agency could manage so effectively the delivery of noneducational services. It would be naive to believe that a radical restructuring of statewide delivery systems for disadvantaged students is possible in the immediate future. The problems documented in this report are of magnitude and have such far-reaching social implications that integration of these findings into the fabric of social planning will take some time.

MIGRANT STUDENT NEEDS

BACKGROUND (Teacher Observations)

Findings	Recommendations
Economic needs interfere with education significantly more often for Migrant students than Nonmigrant students	Provide necessary materials such as books, paper, pencils, shoes, clothing, etc.
	Conduct seminars for teachers and counselors concerning available assistance for migrants
	Implement school lunch and breakfast program for all migrant students in need
	Encourage economic development of parent, i.e., training, language skills, etc.
Communication problems interfere with education significantly more often for Migrant students than Nonmigrant students	Utilize more bilingual teachers
	Place emphasis on the learning of English
	Implement more one-to-one teacher-pupil interactions such as tutorial programs
	Establish teacher training programs to sensitize educators to a migrant child's way of life including his values, beliefs, and attitudes
Teachers give highest priority for special services significantly more often for Migrant students than Nonmigrant students	Increase the number of teacher assistants to reduce the present student/educator ratio
	Establish teacher training for sensitizing educators to the migrant child's way of life
	Provide additional material for instruction and equipment to support teachers

MIGRANT STUDENT NEEDS

BACKGROUND (Teacher Observations) (Cont.)

Findings	Recommendations
	• Provide more specialized services for referral when a teacher finds a need for outside referral • Make considerable use of consultants who have shown success in working with migrant children, e.g., the Consultant Cadre
• Family is not supportive in school effort significantly more often for Migrant students than for Nonmigrant students	• Establish parent advisory committees which encourage parental input at each school level

SOCIAL (Teacher Observations)

Findings	Recommendations
• The situation of little or no voluntary participation in school activities occurred significantly more often for Migrant students than for Nonmigrant students	• Encourage activities likely to be of interest to migrants that relate to their lifestyle
• Student withdrawal interfered with education significantly more often for Migrant students than for Nonmigrant students	• Place increased emphasis on learning English • Utilize more bilingual teachers • Lower student/educator ratio by utilizing teacher assistants

MIGRANT STUDENT NEEDS

SOCIAL (Teacher Observations) (Cont.)

Findings	Recommendations
• Behavioral problems requiring counselor referral occurred significantly more often for Migrant students than for Nonmigrant students	• Increase the counselor/student ratio • Implement programs of increased parent-counselor-teacher interaction

ABILITY (Ability to Perceive Abstract Relationships)

• The Fluid Ability scores were significantly lower for Migrant than for Nonmigrant students (Migrant children scored nearly one standard deviation below Nonmigrant children in IQ)	• Encourage prenatal nutrition program • Encourage early-years nutrition programs • Encourage efforts to limit children's exposure to toxic substances • Encourage accessible health and dental care • Provide adult education for parents to study nutrition

SELF-CONCEPT

• The School Affiliation scores were significantly lower for Migrant than for Nonmigrant students	• Establish teacher training programs designed to sensitize educators to the migrant child's way of life, including their values, beliefs, and attitudes • Encourage outside resource people to become involved in the educational process of migrant students

MIGRANT STUDENT NEEDS

SELF-CONCEPT (CONT.)

Findings	Recommendations
• The Self-Security scores were significantly lower for Migrant students than for Nonmigrant students	• Provide more bilingual teachers and teacher assistants • Establish teacher training for sensitizing educators to the migrant child's way of life • Develop cultural awareness programs through which migrant students can take pride in their cultural heritage • Place emphasis on merits of bilingualism
• The Social Maturity scores were significantly lower for Migrant than for Nonmigrant students	• Create programs within schools that emphasize social standards, such as personal hygiene, group interaction skills, and etiquette
• The Social Confidence scores were significantly lower for Migrant than for Nonmigrant students	• Provide more bilingual teachers and teacher assistants • Establish teacher training on the migrant child's way of life • Develop cultural awareness programs • Place emphasis on merits of bilingualism • Create programs within schools that emphasize social standards, such as personal hygiene, group interaction skills, and etiquette
• The Peer Affiliation scores were significantly lower for Migrant than for Nonmigrant students	• Encourage migrant student participation in school activities

MIGRANT STUDENT NEEDS

ACHIEVEMENT

Findings	Recommendations
• Auditory Memory, Rhyming, Visual Matching, School Language, and Quantitative Language scores were significantly lower for 5-year-old-male Migrant than for 5-year-old male Nonmigrant students	• Encourage the use of the Migrant Head Start Program, particularly for males
• Reading and mathematics scores were significantly lower for Migrants than for Nonmigrants at all ages	• Provide more bilingual teachers and teacher assistants • Provide staff development workshops emphasizing reading and mathematics achievement goals • Establish more programs that provide one-to-one teaching, e.g., tutorial programs • Provide additional materials for instruction and equipment to support teachers • Make considerable use of consultants who have shown success in working with migrant children, e.g., the Consultant Cadre. • Increase usage of interstate cooperation, for example, Migrant Student Record Transfer System, Math Skills program, and Teacher Exchange programs
• Career Planning and Career Problem Solving scores were significantly lower for Migrant students than for Nonmigrant students ages 13 and 16	• Develop career education programs for 13 and 16 year olds with emphasis on job opportunities

MIGRANT STUDENT NEEDS

GROSS AND FINE MOTOR

Findings

- Migrant students scored significantly lower than Nonmigrant students on the following tasks for the age group given:
    - Explosive Power, age 7
    - Cardiovascular Endurance, age 13
    - Flexibility, age 13
    - Dynamic Arm Strength, age 13
    - Hand-Eye Coordination, ages 7, 13

Recommendations

- Encourage close cooperation with various heads of migrant education programs and local health agencies as well as civic organizations dedicated to improving the health of migrant students and their families
- Provide consistent follow through once a health problem area has been diagnosed
- Greater effort should be made to provide a system which keeps close supervision on the health needs of migrant children throughout the year
- Pupils should study nutrition which could substantially improve the diet and health of migrant students
- The school lunch program should be expanded in order to provide well-balanced meals for all migrant children
- A free or reduced price breakfast program should be implemented for all migrant children
- Adult education for parents to study nutrition should be provided

FORMER MIGRANT STUDENT NEEDS

BACKGROUND (Teacher Observations)

Findings	Recommendations
• Former Migrant students repeated one or more grades significantly more often than Nonmigrant students	• More one-to-one teacher pupil programs such as tutorial arrangements should be implemented • Establish teacher training to sensitize educators to the Former Migrant child's way of life

SOCIAL (Teacher Observations)

• The situation of little or no Voluntary Participation in school activities occurs significantly more often for Former Migrant students than for Nonmigrant students	• Encourage activities likely to be of interest to Former Migrants

ABILITY

• The Fluid Ability scores were significantly lower for Former Migrant than for Nonmigrant students	• Encourage prenatal nutrition programs and early-years nutritional programs • Encourage easily accessible health and dental care programs • Provide adult education for parents to study nutrition

SELF-CONCEPT

• The School Affiliation scores were significantly lower for Former Migrant students than for Nonmigrant students	• Establish teacher training programs for sensitizing educators to the Former Migrant child's way of life, including their values, beliefs, and attitudes

FORMER MIGRANT STUDENT NEEDS

SELF-CONCEPT (CONT.)

Findings	Recommendations
	• Encourage outside resource people to become involved in the educational process of Former Migrant Students
• The Self-Security scores were significantly lower for Former Migrant students than for Nonmigrant students	• Provide more bilingual teachers and teacher assistants • Establish teacher training for sensitizing educators to the migrant child's way of life • Develop cultural awareness programs by which students can take pride in their cultural heritage • Place emphasis on the merits of bilingualism
• The Social Maturity scores were significantly lower for Former Migrant students than for Nonmigrant students	• Create programs within schools that emphasize social standards, such as personal hygiene, group interaction skills, and etiquette
• The Social Confidence scores were significantly lower for Former Migrant students than for Nonmigrant students	• Provide more bilingual teachers and teacher assistants • Establish teacher training programs about the Former Migrant child's way of life • Develop cultural awareness programs • Place emphasis on merits of bilingualism • Create programs within schools that emphasize social standards, such as personal hygiene, group interaction skills, and etiquette

FORMER MIGRANT STUDENT NEEDS

ACHIEVEMENT

Findings	Recommendations
• Reading and mathematics scores were significantly lower for Former Migrant students than for Nonmigrant students	• Provide more bilingual teachers and teacher assistants
	• Provide staff development workshops emphasizing reading achievement goals
	• Establish more programs that provide one-to-one teaching, such as tutorial programs
	• Provide additional materials for instruction and equipment to support teachers
	• Make considerable use of consultants who have shown success in working with Former Migrant children, such as the Consultant Cadre
	• Increase usage of interstate cooperation, for example, Migrant Student Record Transfer System and Teacher Exchange programs
• Career Planning and Career Problem Solving scores were significantly lower for Former Migrant than for Nonmigrant students at ages 13 and 16	• Develop career education programs for 13 and 16 year olds with an emphasis on job opportunities

GROSS AND FINE MOTOR

Findings	Recommendations
• Former Migrant students scored significantly lower than Nonmigrant students on the following tasks for the age groups given: — Flexibility, age 13 — Dynamic Arm Strength, age 13	• Encourage close cooperation between heads of migrant education programs and local health agencies as well civic organizations dedicated to improving the health of Former Migrant students and their families

FORMER MIGRANT STUDENT NEEDS

GROSS AND FINE MOTOR (CONT.)

Findings

Recommendations

- Implement a program for consistent follow through once a health problem area has been diagnosed
- Greater effort should be made to provide a system which keeps close supervision on the health needs of Former Migrant children throughout the year
- Pupils should study nutrition which could substantially improve the diets and health of Former Migrant students
- The school lunch program should be expanded in order to provide well-balanced meals
- The free or reduced price breakfast program should be significantly expanded
- Adult education for parents to study nutrition should be provided

APPENDIX A

DESCRIPTION OF INSTRUMENTS USED IN ARIZONA STUDENT NEEDS ASSESSMENT

APPENDIX A

DESCRIPTION OF INSTRUMENTS USED IN ARIZONA STUDENT NEEDS ASSESSMENT

Each of the instruments used in the assessment is described. The organization, in keeping with the rest of the report, is according to behavioral domain.

Background and Social Domains

In order to obtain background and social information on each student, the Student Information Form (SIF) was completed by the teacher most familiar with the individual student being evaluated (i.e., the regular classroom teacher for students in the lower grades; the language teacher or guidance counselor for students in the upper grades). Responses were given to such questions as the following:

1. Background - Has the student repeated a grade? If so, which grade has been repeated? During the previous school year, how many days was the student absent? Are family members supportive of school efforts?

2. Social - Does the student have behavioral problems requiring referral to other services? Do you know of any physical or health problems interfering with the student's educational progress? Is there evidence that economic need interferes with classroom performance? Does he voluntarily participate in classroom activities? Has he any communications problem that interferes with his educational progress (including bilingual)?

Ability Domain

Every child who enters a school system comes with a different background of experience, and thus starts out with a different body of knowledge and set of understandings. It is essential that educators focus their attention on such variations in cognitive development, with respect to their nature, origins, modifiability, and implications for future achievement.

The Boehm Test of Basic Concepts (BTBC) is designed to measure children's mastery of concepts considered necessary for achievement in the first years of school. The test is read aloud by the teacher, and is appropriate for use with children in the three grades - kindergarten, 1, and 2. BTBC results may be used both to identify children with deficiencies in this area, and to identify individual concepts on which the children could profit from instruction.

Two alternate forms of the BTBC are now available. Form A was published in 1969; Form B, which yields a total raw score equivalent to that of Form A, was released in 1971.

The Culture Fair Intelligence Test (CFI) is designed to measure an individual's fluid ability in a manner which reduces, as much as possible, the influence of verbal fluency, cultural climate, and educational level. The test, which can be administered individually or in a group setting, is nonverbal and requires only that a person be able to perceive relationships between shapes and figures. For this assessment, Scale 1 of the CFI was selected for use for students seven years of age, and Scale 2 for students ten, thirteen, and sixteen years of age. These scales consist of four subtests: Series, Classifications, Matrices, and Conditions. Scores from these four subtests are combined to provide a total raw score readily convertible to a standard IQ score and comparable to other IQ measures.

Self-Concept Domain

Self-Observation Scales (SOS). The Self-Observation Scales are used to measure self-concept at each grade level. The SOS is a nationally normed, group administered instrument with four levels: Primary, Intermediate, Junior High, and Senior High. With one exception, each level incorporates the subscales of its predecessors and includes additional ones as well. The Primary level SOS was appropriate for the five and seven year olds in this evaluation. It has four dimensions: Self-Acceptance, Self-Security, Social Maturity, and School Affiliation. The Intermediate level of the SOS is appropriate for the ten-year-old age level. Three other dimensions are added to the ones measured on the Primary level SOS: Social Confidence, Peer Affiliation, and Teacher Affiliation. The Junior High and Senior High levels of the SOS were appropriate for the thirteen and sixteen year olds in this evaluation.

In this test the previously described subscales, with the exception of Social Maturity, are included. There are also two additions: Self-Assertion and Family Affiliation.

> Self-Acceptance: Children with high scores view themselves positively and attribute to themselves qualities of happiness, importance, and general competence. They see themselves as being valued by peers, family, and teachers. Children with low scores see themselves as unhappy, lacking in general competence and of little importance to others. Three items highly related to this scale are: I am a good person; I am a happy person; I am fun to be with.
>
> School Affiliation: Children with high scores view school as a positive influence in their lives. They enjoy going to school, and they enjoy the activities associated with school. Children with low scores view school as an unhappy place to be. They do not enjoy most school-related activities and are negative about the importance of school in their lives. Three items highly related to this scale are: I like to stay home from school; Each morning I look forward to coming to school; I feel good when I am at school.
>
> Self-Security: Children with high scores report a high level of emotional confidence or stability. They feel that they are in reasonable control of the factors that affect their lives and spend little time worrying over possible troubles. Children with low scores on this scale worry a great deal. They are concerned that something bad may happen and report feelings of nervousness. Three items highly related to this scale are: I worry quite a bit over possible troubles; I am a very nervous person; I often feel angry for no special reason.
>
> Social Maturity: Children with high scores on this scale know how they are supposed to think and feel in a variety of social situations. They have learned the importance of such notions as "fair play," "sharing," "perseverance," "helpfulness," and "generosity." Children with low scores on this scale have not learned these notions and are likely to evidence behaviors that most adults would characterize as selfish, inconsiderate, or immature. Three items highly related to this scale are: I like to play only when I am the leader; I always have to be boss; I like to see other children happy.

Social Confidence: Children with high scores on this scale feel confident of their ability to relate successfully in social situations. They feel confident that they can make friends easily, and that they are valued and enjoyed by their friends. Children with low scores have difficulty making friends, do not feel valued by others and see other people as being more socially adept than themselves. Three items highly related to this scale are: People are always picking on me; Other children are often mean to me; My classmates like me.

Teacher Affiliation: Children with high scores on this scale like their teachers. They see the teacher as helpful, attentive, understanding, and generous. Children with low scores see the teacher as arbitrary, inconsiderate of children, and/or as a source of emotional pain. Three items highly related to this scale are: I like my teachers; My teachers like to help me; My teachers are mean.

Peer Affiliation: Children with high scores on this scale consider their relationships with other children to be both of high quality and of considerable importance to them. They see themselves as approved of and valued by their peers. They like to be with other children. Children with low scores do not see their peer relationships as an asset. They see other children as unfriendly, they have few friends, and do not accept the responsibilities of friendship easily. Three items highly related to this scale are: I don't have many friends; The other children in my class are not friendly toward me; I don't like most of the children in my class.

Self-Assertion: Students with high scores view themselves as possessing leadership qualities and as being respected by others for these qualities. The emphasis on this scale is on how students believe others view them. Students with low scores see themselves as lacking leadership ability and assertiveness. Three items highly related to this scale are: Other students look to me for leadership; Other students look to me for ideas; In discussions with my friends, my point of view usually wins.

Achievement Domain

The Metropolitan Readiness Test (MRT). This test is designed to measure the extent to which school beginners have developed in basic skills and abilities that contribute to readiness for kindergarten and first grade instruction. The test is devised to provide a quick and dependable basis for early determination of the readiness of students, thus helping educators manage the instructional effort more efficiently.

Six subscales comprise the Metropolitan Readiness Test: (1) Auditory Memory, (2) Rhyming, (3) Letter Recognition, (4) Visual Matching, (5) School Language and Listening, and (6) Quantitative Language. The publisher recommends that the tests be given in three sessions to accommodate the short attention span of kindergarten students. These six subscales are moderately intercorrelated and together predict readiness effectively.

Iowa Tests of Basic Skills (ITBS). The ITBS is devised to provide a comprehensive measurement of the fundamental skills; vocabulary, reading, the mechanics of writing, and mathematics. For this assessment, the Primary battery of the ITBS (Level 7) was administered to seven year olds. The subtests of the Primary battery are designed to articulate with levels 9-14 of the ITBS, thus gauging the progress in a continuous developmental sequence for students in grades 1-8. The first subtest of the Primary battery (Level 7) is Vocabulary which consists of thirty items, half requiring matching a picture with an appropriate word and half requiring selection of a word to complete the context of a sentence. The next three subtests evaluate reading comprehension. The first, Pictures, is a presentation of scenes with obvious or suggested actions and relationships. The student is asked a question about the picture on about half of the twenty-seven items and must respond with only a yes-no answer. The remainder of the items require completing a sentence which describes the scene portrayed. In the second subtest, a test of sentence comprehension (statements about facts or relationships which are to be labeled true or false) is constructed with commonly occurring words from grade level readers. Only sixteen items comprise this subtest, and there are only twenty-three items in Stories, the following subtest. Understanding expressed or suggested ideas from short passages is the focus of this subtest which consists of multiple choice questions. Mathematics skills are measured on the two final subtests, which are orally administered. Mathematics concepts is the subject of one subtest, and the other, which samples basic computation facts, involves concept applications. These six subtests give an accurate index of reading and quantitative skills in seven year olds. Students, ages 10-14, were administered the Iowa Tests of Basic Skills (ITBS) levels 9-14. The multilevel editions of the ITBS facilitated the individualized testing of students at different levels of development in the same classroom. All 10-14-year-old students were given four subtests: reading vocabulary, reading comprehension, mathematics concepts, and mathematics problems. Scores on these subtests were converted to grade equivalent rather than percentiles or stanines, in order to provide a cross-grade level comparison.

Tests of Academic Progress (TAP). Sixteen year olds were given the Reading and Mathematics sections of the Tests of Academic Progress (TAP) which is the sequel to the Iowa tests. Four types of skills are evaluated in the Reading subtest. It consists of multiple choice questions about reading selections from subject areas as diverse as newspaper editorials and general science. Location of specific facts, understanding of facts and their implications, and summarization are the principal skills required in the Reading subtest. Understanding a variety of number-related concepts is the focus of the Mathematics subtest. Arithmetic, algebra, geometry, and number system structure are the major topics covered in this section.

Career Maturity Inventory (CMI). The competence test measures the more competitive variables involved in choosing an occupation. These include: how well the individual can appraise his job-related capabilities (strengths and weaknesses); how much he knows about the quality of work; how adept he is in matching personal characteristics with occupational requirements; how foresightful he is in planning for a career; and how effectively he can cope with the problems which arise in the course of career development. In all, there are five parts of the competence test:

- Self-Appraisal (Part I - Knowing Yourself)
- Occupational Information (Part II - Knowing About Jobs)
- Goal Selection (Part III - Changing A Job)
- Planning (Part IV) - Looking Ahead)
- Problem Solving (Part V - What Should They Do?)

Two of the five parts were administered to 13- and 16-year-olds in Arizona: Planning and Problem Solving.

Gross Motor Domain

The Physical Fitness Survey (PFS) was used to examine eight factors of gross motor performance. The PFS is an individually administered instrument involving a wide ranging series of physical activities. The PFS is a factor analytically developed measure with demonstrated reliability and validity.

In the first group of tests, the student combines the power of more than one muscle group for the execution of a task which is then evaluated in terms of time and/or distance. Included in this section are the factors called Speed, Explosive Power, and Cardiovascular Endurance.

> Speed: This factor is measured by the 50-yard dash. Students with low time (i.e., completed the most quickly) in this factor are generally able to maintain a maximum rate of speed over the required distance. Their rapidity of movement is usually characterized by a good balance of body weight, body density, muscular viscosity, length of the legs, and flexibility. A high time (i.e., prolonged time in accomplishing a task) by students in this factor indicates a general lack of speed associated with poor muscular strength as opposed to poor endurance. This may be due to overweight, poor development of the large muscle groups in the legs, and limited or poor knee joint flexibility.
>
> Explosive Power: This factor is measured by the maximum vertical jump. Students with high maximum jumps exhibit the ability to mobilize their energy into a singular maximum contraction of large muscle groups while performing an aerobic work. Students with low scores often lack the combination of force (explosive movement of the leg muscles) and velocity (speed with which the body mass is projected through space) needed to attain a high maximum jump. Weight is a major factor in poor performance. If two students are the same height but of different weights, and if all other influences are held constant, the student who weighs less should jump higher.

Cardiovascular Endurance: The two-minute squat thrusts measure the cardiovascular endurance factor. Students with a high total score are able to persist in physical activity for extended periods of time. They are usually characterized by strong heart muscles. efficient circulation of blood through the tissues, properly functioning lungs, and high aerobic capacity. Students with low scores generally exhibit poor stamina, are subject to rapid muscular fatigue, and will display oxygen deficiency more quickly than students possessing good cardiovascular endurance. Poor cardiovascular endurance may be associated with a wide variety of dysfunctions, such as anemia, heart murmur, or asthma. Anatomic/physiological problems might stem from poor muscular development in the arms and legs or from low cardiac output in proportion to the minute heart rate.

The second group of Gross Motor factors is more a reflection of the body's ability to coordinate the activity of its muscles and joints than it is of the muscles' ability to exert force and power. Factors included in this group are Flexibility, Balance, and Agility.

Flexibility: This factor is measured by two items, the "bi-polar flex" and "elbows to the floor." A total flexibility factor is derived by summing the arm and leg measures of the bi-polar flex and subtracting from that total the obtained score from "elbows to the floor." A high total score indicates that the student has good overall extent flexibility characterized by good extensibility of the arm and leg muscles, and good forward then downward movement of the lower back muscles. A low score might imply one of several potential flexibility problems: 1) the student might lack proper range of movement about the hip or shoulder girdle joints; 2) muscle extensibility might be limited by poor development or overdevelopment; or 3) a lower back disorder might exist, particularly if the "elbows to the floor" item significantly lowers the total flexibility score.

Balance: The balance factor is measured by the mini-balance task. The mini-balance is a combination of static and dynamic balance factors. The task is performed by keeping the foot on a single spot and requiring movement of the rest of the body to maintain equilibrium. Students who stay balanced for a long time generally exhibit good neuromuscular control and are able to maintain equilibrium with little trouble. Students with low times seem to lack the efficient motor response needed to maintain balance. Research is unclear on the subject of symptomatic problems pertaining to poor balance, but several areas to consider are malfunction of the semicircular canals in the ears, nutritional imbalance and deficiencies, and poor kinesthetic sense which is governed by the proprioceptors in the muscles.

Agility: The agility factor measures the ability of the individual to move from one position in space to another employing the large muscle groups of the body. The 15-yard hop measures the agility factor. Students with low times on this item are able to move the arms and legs rapidly and exhibit a good degree of coordination between the large muscle groups of the body. Low times are a good indicator of good running agility requiring a minimum of skill involvement. Students with high times are unable to coordinate the hopping task with the forward movement of the body; their problem becomes one of being unable to maintain direction, accuracy, and rapidity needed to accomplish the task.

The last two Gross Motor Domain factors test the amount of force which can be exerted for a short duration against a fixed object — termed Static Strength, and the amount of force which can be exerted by a set of muscle groups for a period of time when the limbs are in motion — termed Dynamic Strength.

Dynamic (arm) Strength: The tricep extension is the item used to measure the dynamic arm strength factor. Students with high scores in this factor can repeat the item many times over. High scores reflect strong development of the biceps and rotator cuff muscles. Students with low scores often lack muscular strength or cannot move their weight in proportion to the amount of force generated by the muscular contractions in the arms. Muscular arm strength is related to the cross-sectional size of a muscle group; therefore, a relationship exists between body weight and the number of repetitions that can be accomplished.

Static (arm) Strength: This factor is measured by the flexed arm hang. Students who are able to hang for a long period of time exhibit strong isometric strength and are able to support their body weight with the muscle groups of the arms. Students performing poorly on this item (a low time) are unable to generate the force required to maintain the body in the hanging position. Low scores may be due to overweight and/or poor development of the arm muscle group.

Fine Motor Domain

A second set of items from the Physical Fitness Survey (PFS) was used to measure two aspects of Fine Motor performance. These measures completed the total evaluation of each student's physical development in conjunction with the height and weight recordings, thereby providing both static and dynamic aspects of physical fitness.

Hand-Eye Coordination: This factor is measured by the bead string. Hand-eye coordination involves speed and precision of hand movement governed by the eye. Students with low times have good hand-eye coordination, movement is fast and is characterized by good finger dexterity, and precision is sharp. A high score by the students indicates poor hand movement and poor precision. Problems might result from vision deficiency, perceptual difficulties, and/or poor manipulative ability in the small muscles of the thumb and index fingers.

Digital Coordination: This factor was measured by the knotting rope item and is characterized by skillful, controlled finger movement. Students with low times on this item generally exhibit high speed in hand and finger coordination and movement. A high time indicates that the student lacks the ability to manipulate items in the hands quickly. A low performance level on this item may be linked to inadequate neuromuscular coordination of the fingers and hands, and/or poor interpretation of task assignment. Muscular fatigue might also occur if the fine muscles of the hands or fingers are underdeveloped.

APPENDIX B

STATISTICAL ANALYSES OF TEACHER RESPONSES AND TEST RESULTS

APPENDIX B

STATISTICAL ANALYSES OF TEACHER RESPONSES AND TEST RESULTS

The data compiled in the figures which follow were excerpted and rendered symbolically in the figures supporting the text in Chapter 3 of Section A. The simpler form of the figure was used in the text to promote easier comprehension of the important conclusions derived from the students' assessment. The underlying data are recorded here for researchers or others requiring a more technical report on teachers' responses and test results.

Orientation to Data Presentation

Background and Social Domains — For the Background and Social Domains, teachers' responses recorded on the Student Information Forms are compiled in Figures A1-12. The figures provide the percentages of students with a certain attribute, by group (Migrant, Former Migrant, Nonmigrant) and by male and female. The sample size is noted along the bottom rank. Significant differences are shown in a separate table inset at the lower right-hand corner of the page. The significance of differences between proportions has been computed for three pairs: Migrant vs. Former Migrant, Former Migrant vs. Nonmigrant, and Migrant vs. Nonmigrant. An "NS" indicates the difference is not statistically significant. Significant statistical deviations are classified by three levels of probability: "<.05" indicates the actual percentage difference is 2 to 2.5 times the standard error, the probability of occurrence by chance being less than 20 to 1 but greater than 100 to 1; "<.01" indicates 2.6 to 3.2 times the standard error, or less than 100 to 1 but greater than 1000 to 1; and "<.001" indicates 3.3 or more times the standard error, or less than 1000 to 1. (The difference observed between Migrants and Nonmigrants on communications problems interfering with education, it is interesting to note, is sufficiently great that the probability its occurrence is attributable to sampling fluctuation is almost 2,000,000 to 1.)

Using Figure A5 as an example, it may be observed that on 20% of the 248 Student Information Forms for Migrant students, teachers responded that economic needs interfered with classroom performance, while 9% of the 152 Former Migrants and 7% of the 184 Nonmigrants were so described by their teachers. The difference between Former Migrants and Nonmigrants is not statistically significant; but the difference between Migrants and Former Migrants is significant at the .01 level and between Migrants and Nonmigrants at the .001 level.

Other Domains — For the other five domains, students' performances on the battery of tests are analyzed in Figures A13-17. Figure A16, which appears later in this appendix, will be used as an example. The purpose of Figure A16 is to show differences between two groups on Self-Concept factors. In this case, the two groups are Migrants and Nonmigrants. The Self-Concept factors are Self-Acceptance, Self-Secutiry, School Affiliation, Social Maturity, Social Confidence, Teacher Affiliation, Peer

Affiliation, and Self-Assertion. Differences are expressed separately at ages five, seven, ten, thirteen, and sixteen for both male and female segments of the sample population.

Coefficients entered in the table represent the difference between the two groups in terms of the number of standard deviation units of their group mean from the mean of all subjects taking the test. For example, if the mean of the Migrants was -.15 standard deviations (below) the mean of all students (Migrant, Former Migrant, and Nonmigrant) taking the test and if the mean of the Nonmigrants was +.20 standard deviations (above) the mean, the difference would be (-.15) - (+.20) = -.35, the ".35" representing the distance and the "—" representing the strength on the side of the second group — that is, the Nonmigrants (since the second is subtracted from the first). Read another way, the "-.35" means that Migrants are deficient on this factor in relation to Nonmigrants to the extent of .35 standard deviations. Any difference between two means amounting to .35 standard deviations or greater is generally significant at the .05 level.

The "Summary Statistics" at the bottom of the table show —

- Sample sizes — the number in each group (Migrant and Nonmigrant, in that order, as established in the caption to the table);

- Total Standardized Difference — the distance between the centroids for each age-sex component, for all factors comprising the Self-Concept Domain.

- Canonical Correlation — the correlation coefficient between the two groups for each age-sex component which measures the discriminating power of Self-Concept factors.

Coefficients which are statistically significant at the .05 level are highlighted by an asterisk. In the body of the figure, all coefficients of less than |.20| have been suppressed so that an already complex data presentation would not be cluttered by the presence of relatively meaningless numbers. The absence of a coefficient, therefore, can be construed as "nothing worthy of notice," either because the difference is insignificant or because every age-sex component was not rated on every factor.

An Explanation of "Notable Differences" as Used in the Text

The analysis approach taken in the students' needs assessment was to present a series of *z*-score differences, each tested for significance. For example, the score for 16-year-old-male Migrant students was compared to the score for 16-year-old-male Nonmigrant students. When a comparison is made among age groups, a notable difference is defined as the occurrence of a significant difference in an age group for *both* sexes. With this criteria, a notable difference will occur less frequently than would a significant difference using other analytic approaches such as the analysis of variance. The notable difference procedure was selected to produce a conservative estimate of student needs.

Defining notable differences between the sexes was a more difficult procedure. Typically, more than two age groups had to be considered. The following criterion was used. A notable difference between male and female was said to have occurred if more age groups experienced a significant difference for one sex than for the other. An exception to this rule occurred if the significant differences were in varying directions. By using the notable difference procedure, males are said to differ from females, not based on the grand mean for all ages, but on the number of age groups experiencing a significant difference. Thus, statements concerning a sex-related need would be based on the number of age groups experiencing a deficiency rather than on the total of scores for all age groups.

FIGURE A1

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO STUDENT REPEATING ONE OR MORE GRADES

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
No Retention	69%	83%	75%	72%	61%	68%	87%	79%	83%
One of More Grade Retentions	31%	17%	25%	28%	39%	32%	13%	21%	17%
Sample Size	136	105	241	87	49	136	90	93	183

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	NS
Former Migrant vs. Nonmigrant	<.01
Migrant vs. Nonmigrant	NS

FIGURE A2

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO DAYS ABSENT PER SCHOOL YEAR

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0 - 9 Days	80%	85%	82%	85%	91%	87%	78%	90%	84%
10 - 19 Days	13%	13%	13%	3%	9%	5%	19%	10%	15%
20 or More Days	7%	2%	5%	12%	0%	8%	3%	0%	1%

Sample Size	138	118	256	97	50	147	94	98	192

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Due to the nature of the data, a test of significance between proportions is inappropriate.

FIGURE A3

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO HEALTH PROBLEMS THAT INTERFERE WITH THEIR EDUCATION

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Health Problems	21%	8%	15%	13%	13%	13%	10%	13%	11%
No Health Problems	79%	92%	85%	87%	87%	87%	90%	87%	89%
Sample Size	141	126	267	79	48	127	109	98	207

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	NS
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	NS

FIGURE A4

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT AND NONMIGRANT STUDENTS AS TO HANDICAPS

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Handicaps	21%	4%	12%	10%	10%	10%	12%	13%	12%
No Handicaps	79%	96%	88%	90%	90%	90%	88%	87%	88%

Sample Size	131	142	273	99	46	145	96	89	185

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	NS
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	NS

FIGURE A5

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS AS TO HAVING ECONOMIC NEEDS INTERFERING WITH CLASSROOM PERFORMANCE

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Economic Interference	21%	19%	20%	11%	6%	9%	8%	6%	7%
No Economic Interference	79%	81%	80%	89%	94%	91%	92%	94%	93%

Sample Size	132	116	248	100	52	152	90	94	184

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	<.01
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	<.001

FIGURE A6

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS AS TO HAVING COMMUNICATIONS PROBLEMS INTERFERING WITH THEIR EDUCATION

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Communication Problems	29%	29%	29%	12%	15%	13%	6%	10%	8%
No Communication Problems	71%	71%	71%	88%	85%	87%	94%	90%	91%

Sample Size	126	115	241	97	50	147	90	99	189

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	<.05
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	<.001

FIGURE A7

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS AS TO WHOM TEACHERS WOULD GIVE PRIORITIES FOR SPECIAL SERVICES

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Highest	26%	24%	25%	15%	20%	17%	6%	8%	7%
Middle	40%	39%	39%	28%	52%	36%	24%	18%	21%
Lowest	11%	19%	15%	11%	6%	9%	18%	12%	15%
Does Not Need Special Help	23%	18%	20%	46%	22%	38%	52%	62%	57%

Sample Size	128	110	238	98	52	150	89	92	181

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Due to the nature of the data, a test of significance between proportions is inappropriate.

FIGURE A8

BACKGROUND DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS REGARDING FAMILY SUPPORT IN SCHOOL EFFORTS

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Supportive	58%	94%	74%	86%	92%	88%	82%	92%	87%
Not Supportive	37%	5%	23%	12%	6%	10%	13%	4%	8%
Not Applicable	5%	1%	3%	2%	2%	2%	5%	4%	4%

Sample Size	137	115	252	97	45	142	93	97	190

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	<.001
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	<.001

FIGURE A9

SOCIAL DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO VOLUNTARY PARTICIPATION IN SCHOOL ACTIVITIES

Degree of Participation	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Moderate to Excessive	73%	66%	70%	71%	60%	67%	73%	93%	83%
Little or None	27%	34%	30%	29%	40%	31%	27%	7%	18%

Sample Size	136	120	256	94	54	148	93	96	189

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	NS
Former Migrant vs. Nonmigrant	<.001
Migrant vs. Nonmigrant	<.01

FIGURE A10

SOCIAL DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO STUDENT WITHDRAWAL TO SUCH A POINT AS TO INTERFERE WITH EDUCATION

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Student Withdrawal	31%	29%	30%	20%	12%	17%	11%	15%	13%
No Withdrawal	69%	71%	70%	80%	88%	83%	89%	85%	88%

Sample Size	150	119	269	92	48	140	86	95	181

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	<.01
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	<.001

FIGURE A11

SOCIAL DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO STUDENT AGGRESSION TO SUCH A POINT AS TO INTERFERE WITH EDUCATION

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Student Aggression	20%	22%	21%	21%	18%	20%	32%	20%	26%
No Aggression	80%	78%	79%	79%	82%	79%	68%	80%	74%

Sample Size	142	99	241	93	48	141	97	95	192

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	NS
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	NS

FIGURE A12

SOCIAL DOMAIN

SUMMARY OF DIFFERENCES AMONG MIGRANT, FORMER MIGRANT, AND NONMIGRANT STUDENTS IN RELATION TO SERIOUS BEHAVIORAL PROBLEMS REQUIRING COUNSELOR REFERRAL

	Migrant			Former Migrant			Nonmigrant		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Counselor Referral	13%	4%	9%	3%	3%	3%	6%	2%	4%
No Need for Referral	87%	96%	90%	97%	97%	97%	94%	98%	95%

Sample Size	135	115	250	88	51	139	96	94	190

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

Significant Differences	
Migrant vs. Former Migrant	<.05
Former Migrant vs. Nonmigrant	NS
Migrant vs. Nonmigrant	<.05

FIGURE A13

ABILITY DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Fluid Ability	-.30	-.35*	-.48*		-.76*		-.83*	-.76*	-.86*	-.59*

SUMMARY STATISTICS										
Sample Sizes	25/27	22/32	21/29	30/19	16/25	21/22	24/25	26/22	17/12	23/19
Total Standardized Difference	.29	.37	.44	.14	.67	.16	.75	.72	.87	.72
Canonical Correlation	.14	.18	.22	.08	.33*	.08	.38*	.36*	.44*	.36*

(Source: D. A. Lewis Associates. Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p<.05$ level.
Differences less than |.20| not reported.

FIGURE A14

ABILITY DOMAIN

SUMMARY OF DIFFERENCES BETWEEN FORMER MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Fluid Ability		-.46*			-.75*		-.55*	-.73*	-.46*	-.39*
SUMMARY STATISTICS										
Sample Sizes	4/27	13/32	28/29	23/19	17/25	4/22	9/25	17/22	15/12	15/19
Total Standardized Difference	.12	.49	.15	.01	.68	.11	.48	.69	.72	.46
Canonical Correlation	.04	.22	.08	.00	.33*	.04	.21	.35*	.37*	.23

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p \leq .05$ level.
Differences less than $|.20|$ not reported.

FIGURE A15

ABILITY DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND FORMER MIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Fluid Ability			.31				.29		.39*	.20
SUMMARY STATISTICS										
Sample Sizes	24/4	23/13	21/28	30/23	16/17	21/4	24/9	26/17	17/15	23/15
Total Standardized Difference	.16	.11	.34	.16	.01	.30	.38	.0[illegible]	.43	.22
Canonical Correlation	.06	.06	.17	.08	.00	.11	.17	.02	.22	.11

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than |.20| not reported.

FIGURE A16

SELF-CONCEPT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Self-Acceptance				-.27	-.62*			-.25		.24
School Affiliation			-.23	-1.82*	-1.77*		.29		-1.92*	-1.84*
Self-Security	-.38*	-.40*			-.59*	-.38*	-.46*	-.65*	-.54*	-.48*
Social Maturity	-.28	-.72*						-.69*		
Social Confidence				-.71*	-.80*			-.34	-.73*	-.98*
Teacher Affiliation			-.22		-.51*			-.36*		
Peer Affiliation				-.47*	-.69*			-.78*	-.29	
Self-Assertion				.34	-.87*					-.24
SUMMARY STATISTICS										
Sample Sizes	25/24	25/32	18/26	33/17	13/27	30/19	26/25	23/22	17/12	22/18
Total Standardized Difference	.51	.75	.57	.89	1.35	.44	.75	.88	.94	1.42
Canonical Correlation	.26	.37	.29	.43	.64*	.22	.38	.45	.47	.72*

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than $|.20|$ not reported.

FIGURE A17

SELF-CONCEPT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN FORMER MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Self-Acceptance					-.80*		-.57*	-.34		
School Affiliation		-.30		-.98*	-.87*		-.54*		-.92*	-1.19*
Self-Security		-.40*	1.68*	.29	-.70*		-.51*		-.52*	-.40*
Social Maturity		-.75*	-.42*				-.62*			
Social Confidence				-.86*	-.68*			-.21		-.80*
Teacher Affiliation					-.28					
Peer Affiliation				-.29	-.50*			-.53*	.34	-.35*
Self-Assertion					-.88*					
SUMMARY STATISTICS										
Sample Sizes	2/24	10/32	28/26	23/17	16/27	1/19	8/25	18/22	17/12	13/18
Total Standardized Difference	1.60	.84	.81	1.20	1.16	1.52	.66	.80	.97	1.07
Canonical Correlation	.43	.37	.42	.60*	.57*	.34	.29	.41	.49	.54

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than |.20| not reported.

FIGURE A18

SELF-CONCEPT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND FORMER MIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Self-Acceptance							.41*			.36*
School Affiliation			-.37*	-.84*	-.90*		.83*	.27	-1.00*	-.65*
Self-Security			-.23	-.38*				-.59*		
Social Maturity			.29				.42*	-.53*		
Social Confidence			.21						-.67*	
Teacher Affiliation					-.23					
Peer Affiliation								-.24	-.63*	.46*
Self-Assertion				.31						-.18
SUMMARY STATISTICS										
Sample Sizes	25/2	25/10	18/28	33/23	13/16	30/1	26/8	23/18	17/17	22/13
Total Standardized Difference	1.59	.24	.80	.76	.46	2.04	1.02	.87	1.12	1.05
Canonical Correlation	.43	.11	.40	.38	.24	.37	.44	.44	.57	.52

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

* Statistic is significant at the $p < .05$ level.

Differences less than |.20| not reported.

FIGURE A19

ACHIEVEMENT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Auditory Memory						.40*				
Rhyming	-.49*									
Letter Recognition	-.48*					-.40*				
Visual Matching	-.39*					-.49*				
School Language and Listening	-.44*									
Quantitative Language	-.47*									
Reading Vocabulary		-.83*	-.35*	-.42*			-.76*	-.57*	-.86*	
Reading Comprehension		-.79*	-.40*	-.86*			-.64*	-.68*	-.86*	
Reading					-1.15*					-.74*
Mathematics Concepts		-.38*		-.32			-.33*	-.51*	-.81*	
Mathematics Problem Solving		-.46*	-.72*	-.60*					-.48*	
Mathematics					-1.03*					-.75*
Career Planning					-.71*				-.58*	-1.16*
Career Problem Solving				-.36*	-1.44*				-.61*	-1.36*
SUMMARY STATISTICS										
Sample Sizes	25/25	23/30	22/29	22/19	17/25	22/22	27/22	27/23	17/13	23/19
Total Standardized Difference	.82	.92	.92	.88	1.81	1.02	.92	1.01	1.09	1.89
Canonical Correlation	.41	.46*	.46*	.42*	.90*	.57	.47*	.51*	.55*	.98*

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than |.20| not reported.

FIGURE A20

ACHIEVEMENT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN FORMER MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Auditory Memory										
Rhyming										
Letter Recognition										
Visual Matching										
School Language and Listening										
Quantitative Language										
Reading Vocabulary		-.71*	-.28	-.31			1.12*	-.31	-.85*	
Reading Comprehension		-.64*	-.42*	-.70*			-.65*	-.70*	-.77*	
Reading					-.98*					
Mathematics Concepts		-.30		-.66*			-.19	-.25	-.95*	
Mathematics Problem Solving		-.37*	-.34	-.61*			-.33	-.46*	-.53*	
Mathematics					-1.04*					-.28
Career Planning				-.40*	-.35*				-.66*	-.59*
Career Problem Solving				-.35*	-.80*				-.52*	-.77*
SUMMARY STATISTICS										
Sample Sizes	4/25	13/31	27/29	23/18	17/25	4/22	9/27	17/23	14/13	15/19
Total Standardized Difference	.00	.85	.69	.55	.98	.01	1.09	1.08	1.05	1.86
Canonical Correlation	.83*	.39	.35	.27	.50	.55	.50	.54*	.59*	.98*

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

* Statistic is significant at the $p < .05$ level.

Differences less than |.20| not reported.

FIGURE A21

ACHIEVEMENT DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND FORMER MIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Auditory Memory										
Rhyming										
Letter Recognition										
Visual Matching										
School Language and Listening										
Quantitative Language										
Reading Vocabulary							-.36*	.26		
Reading Comprehension										
Reading										.68*
Mathematics Concepts			.31	-.34				.26		
Mathematics Problem Solving			.38*				-.20	.28		
Mathematics										.46*
Career Planning				.24	.38*					.58*
Career Problem Solving					.64*					.59*
SUMMARY STATISTICS										
Sample Sizes	24/4	23/13	22/28	32/23	17/17	20/4	23/8	26/17	17/15	23/15
Total Standardized Difference	.00	.21	.76	.63	1.82	.00	.90	.88	.38	1.54
Canonical Correlation	.66	.11	.38	.31	.93*	.79*	.41	.44	.19	.80

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the p<.05 level.
Differences less than |.20| not reported.

FIGURE A22

GROSS MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Speed		-.29	.34	-.52*			-.50*		.26	
Explosive Power		-.47*	.39*				-.36*			
Cardiovascular Endurance		.22	-.20	-.71*	.28			.22	-.60*	
Flexibility		-.68*	-.25	-.63*	-.42*		-.26	.37*	-.82*	.25
Balance		-.27	.23	-.74*			-.24	-.34	-.22	
Agility			-.32	.25			-.25		.23	
Dynamic Arm Strength		-.31		-1.66*					-.94*	-.42*
Static Arm Strength		-.24	-.25		.32		-.26	-.26	.36*	
SUMMARY STATISTICS										
Sample Sizes		14/20	13/23	26/18	12/17		14/16	14/13	13/15	16/10
Total Standardized Difference		1.42	1.30	1.47	.85		1.41	1.37	1.69	1.41
Canonical Correlation		.72	.64	.73*	.44		.72	.70	.86*	.71

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than $|.20|$ not reported.

FIGURE A23

GROSS MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN FORMER MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Speed				-.55*						
Explosive Power					-.63*					
Cardiovascular Endurance			-.25	-.29	-.21				-.49*	
Flexibility			-.28	-.62*					-.35*	
Balance				-.80*				-.25	-.31	-.42*
Agility			-.25							
Dynamic Arm Strength				-1.50*					-1.16*	
Static Arm Strength			.22	.82*	.37*			-.42*		.31

SUMMARY STATISTICS										
Sample Sizes		6/20	20/23	26/18	12/17		3/16	13/13	13/15	8/10
Total Standardized Difference		1.76	.90	1.44	1.45		2.03	1.00	1.45	1.71
Canonical Correlation		.76	.46	.72*	.73		.77	.52	.74	.88

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than |.20| not reported.

FIGURE A24

GROSS MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND FORMER MIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Speed								.24		
Explosive Power					.51*					
Cardiovascular Endurance				-.42*	.49*			.33		
Flexibility					-.51*			.46*	-.47*	
Balance										-.45*
Agility										
Dynamic Arm Strength									.21	-.32
Static Arm Strength			-.45*	-.72*					.28	-.26
SUMMARY STATISTICS										
Sample Sizes		14/6	13/20	26/26	12/12		14/3	14/13	13/13	16/8
Total Standardized Difference		1.30	1.58	1.10	.92		1.56	1.46	1.34	1.54
Canonical Correlation		.62	.79*	.56	.48		.61	.75	.69	.75

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

* Statistic is significant at the $p < .05$ level.

Differences less than $|.20|$ not reported.

FIGURE A25

FINE MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Hand Eye Coordination		-.65*		-.46*			-.35*		-.37*	
Digital Coordination		-.93*	.26	-.44*			-.20	.29		-.20
SUMMARY STATISTICS										
Sample Sizes		24/31	20/29	32/20	13/22		26/27	25/23	17/16	23/15
Total Standardized Difference		.57	.42	1.28	.65		.43	.54	1.24	.76
Canonical Correlation		.29	.22	.62*	.32		.23	.28	.64*	.38

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)

* Statistic is significant at the $p < .05$ level.

Differences less than |.20| not reported.

FIGURE A26

FINE MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN FORMER MIGRANT AND NONMIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Hand-Eye Coordination		-.88*	.46*				-.23		-.23	
Digital Coordination		-1.52*		-.60*	.53*		-.22			
SUMMARY STATISTICS										
Sample Sizes		13/31	25/29	27/20	16/22		7/27	19/23	20/16	14/15
Total Standardized Difference		.96	.43	.80	.74		.36	.33	.98	.67
Canonical Correlation		.45*	.23	.41*	.37		.15	.17	.49*	.35

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the $p < .05$ level.
Differences less than $|.20|$ not reported.

FIGURE A27

FINE MOTOR DOMAIN

SUMMARY OF DIFFERENCES BETWEEN MIGRANT AND FORMER MIGRANT STUDENTS

	Males					Females				
Age Level	5	7	10	13	16	5	7	10	13	16
Hand Eye Coordination		.23	-.35*	-.36*						
Digital Coordination		.59*	.35*		-.69*			.33	.22	-.29

SUMMARY STATISTICS										
Sample Sizes		24/13	20/25	32/27	13/16		26/7	25/19	17/20	23/14
Total Standardized Difference		.52	.52	.78	1.01		.66	.72	.78	.53
Canonical Correlation		.26	.27	.40*	.52*		.28	.36	.40	.27

(Source: D. A. Lewis Associates, Inc., Needs Assessment for Arizona's Migrant Students)
* Statistic is significant at the p<.05 level.
Differences less than |.20| not reported.

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